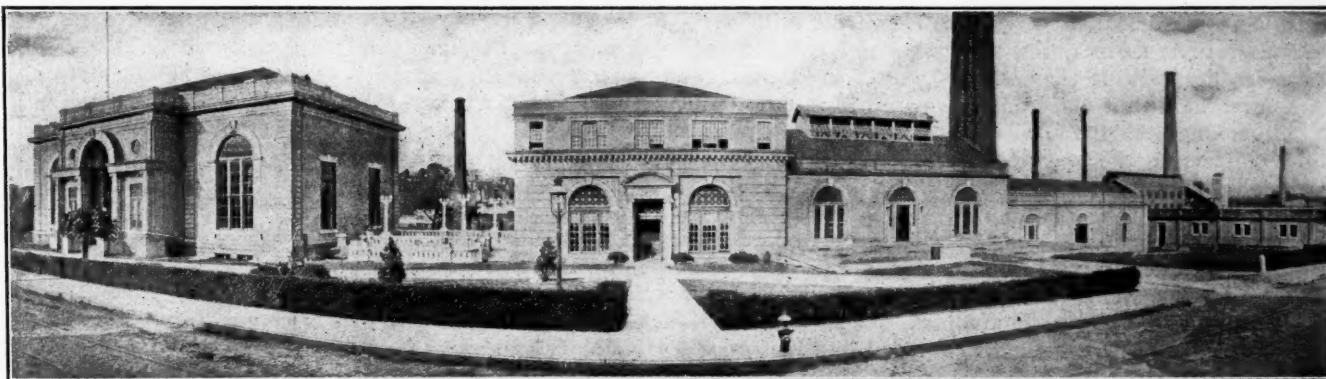


# Municipal Journal

Volume XXXIV.

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No. 21



Pumping Station

Water Power  
Building

Office Building

Boiler House

Plumbing  
Shop

Preliminary  
Filters

BUILDINGS OF WILMINGTON, DEL., WATER WORKS.

## WILMINGTON, DELAWARE, WATER WORKS

**Preliminary Filters, Sedimentation Reservoir and Sand Filters.—Bacterial and Physical Results Obtained by Each.—Cost of Operation.—Mechanical Washing and Raking.—Overcoming Ice Troubles.—Emergency Hypochlorite Plant.**

The water supply of Wilmington, Del., is drawn from the Brandywine creek at a dam approximately 4,800 feet up stream from the pumping station, to which the water is conducted by a race on the south side of the creek. The watershed of this creek, which contains approximately 325 square miles, is occupied by a number of towns and manufacturing plants which contribute considerable pollution to it, and filtration of the water was begun in 1892. The first plant not giving satisfactory results, an extensive investigation of purification methods was made, and a new filtration plant constructed and put into operation early in 1910. As now operated, the water passes from the race to a preliminary filter, the effluent from which is pumped to a new reservoir. Approximately three days are occupied in passing through this reservoir, during which sedimentation takes place, and the water then flows by gravity onto final filter beds, and through these to the filtered water reservoir, from which the purified effluent is led by a 48-inch steel main to the high service system and the low service reservoir, about 2.8 per cent. of the consumption being re-pumped to an extreme high service.

The preliminary filter consists of ten beds, 14 feet 5 inches by 100 feet. The water moves upward through the filters, passing through 6 inches of gravel of various sizes, thence through 20 inches of small coke, and finally through 20 inches of sponge clippings, the latter held in place by cypress racks. A distinguishing feature of this plant is the method employed in cleaning the filter medium. Unlike other plants of this type, in which the sponges are removed for cleaning, the washing of the coke and sponges is done directly in the beds with air and water. For this purpose, there is installed in the beds

under the filter medium a system or manifold of air pipes, the system in each bed consisting of two 6-inch main headers with  $\frac{1}{2}$ -inch laterals at 12-inch intervals. The laterals are plugged at the end and perforated with  $\frac{1}{16}$ -inch holes on 3-inch centres. The flow of air is secured from a rotary blower, and is discharged through the bed under about 5 pounds pressure. Water is discharged through the bed under normal operating heads in either direction, up or down, and the dirty or wash water is carried off by suitably connected drains. This system of cleaning the sponge clippings and coke has been found not only satisfactory, but very effective, and is carried on at a greatly reduced cost of operation and maintenance, only one attendant being required at all times.

The pumping plant which raises the clarified effluent to the sedimentation reservoir consists of two 12-million gallon engines, with space available for another and larger unit. These are housed in a building 60 feet by 110 feet, and 54 feet high.

The sedimentation reservoir, which is about one and three-quarter miles from the pumping station, has a capacity of 35 million gallons, of which 32 million are available. It is triangular in shape, with rounded corners. The elevation of the overflow is 285 feet above mean low tide, and the depth of water is from 17 to 21 feet. The water is discharged into the reservoir through four branches at a point 400 feet from the apex of the triangle. At the apex, the water is drawn off over sluice gate weirs and then delivered to the final filters.

There are six final sand filters, each one-third of an acre in area. These filters are all enclosed under a roof and are above and rest upon the roof of a 6-million gal-

lon reservoir which receives the purified effluent. (This was described in our issue of November 10, 1909.) One of the features of these filters is the fact that a sand washing machine of the Blaisdell type is used for cleaning, which fact led to the adoption of the somewhat unusual shape of the beds—40 feet wide by 362 feet long, the Blaisdell filter being of a size to clean a 20-foot width of filter in one passage over the beds. These two acres of filters were calculated to have a capacity of fifteen million gallons per day, although it is not yet necessary to work them at quite this rate. The filters are separated by concrete walls 24 inches thick and 9 feet high, to the sides of which are bolted cast iron brackets which support rails on which travel a carriage carrying the sand washing machine. This carriage travels from one end of the filter to the other, the sand washer is then moved to the other side of the bed and passes back over the remaining half, thus cleaning the entire bed in one round trip. At one end of the filter beds, tracks are arranged for transferring the washing machine from one bed to another. This machine was described in our issues of November 10, 1909, and April 19, 1911. The lower courses of the filtering material consist of 14 inches of crushed stone and graded gravel, on which rests a layer of sand 24 inches thick. This sand was dredged from the Delaware river, and has an effective size of 0.23 mm. and a uniformity co-efficient of 1.83. The head of water on the sand is  $4\frac{1}{2}$  feet.

From the 1912 report of John A. Kienle, chief engineer of the water department, we abstract some figures and incidents connected with the operation of the plant for that year. The average daily consumption during the year was 11,231,476 gallons, or at the average rate of 5.6 million gallons per acre on the final filters, or 50 million gallons on the preliminary filters.

The operation and maintenance of the sand filters during the year cost \$4,491.77, exclusive of laboratory charges amounting to \$2,186.94; the former sum including \$2,129.68 for salaries, \$209.38 for supplies, \$721.40 for light and power, \$190.89 for repairs and renewals, \$276.84 for additional labor, and the balance for miscellaneous expenses. This total for operation and maintenance gives an average of \$1.118 per million gallons filtered, exclusive of laboratory charges.

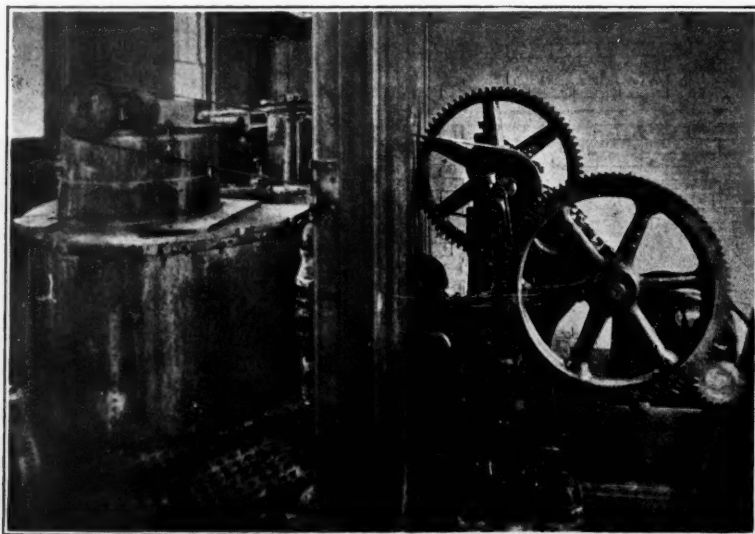
The cost of operating and partially renovating the preliminary filters amounted to \$2,223.69, or 54.1 cents per million gallons; of which \$863.25 was for salaries, \$10.63 for additional labor, \$96.41 for repairs and renewals, \$511.55 for light and power, and the rest for miscellaneous charges.

The laboratory charges averaged 53 cents per million gallons. These figures are gross operating costs, and do not include interest or depreciation on plant investment. Of the miscellaneous expenses on the slow sand filters, \$814.49 was spent for the installation of new equipment which added to the plant value, including the erection of a temporary hypochlorite plant. On the preliminary filters, \$688.30 of the miscellaneous expenses were for the renovation of the beds. If we omit these expenses, the net operating costs per million gallons of water treated are found to be 37.5 cents for pre-filtration, 91.6 cents for sand filtration, and 53 cents for laboratory charges, or a total of \$1.821.

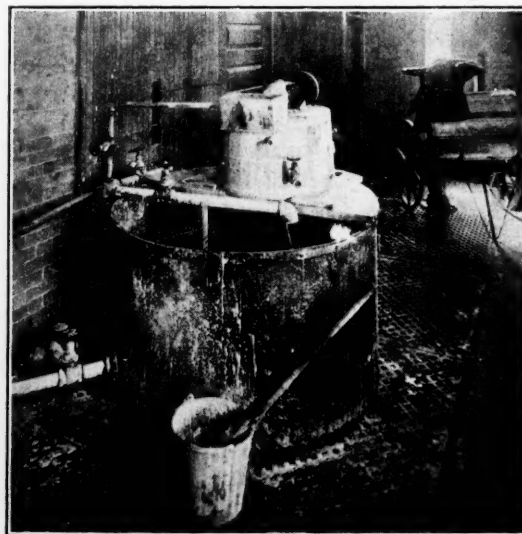
In April, 1912, James M. Caird was employed to supervise the work of the laboratory, and placed a resident chemist at the plant who made daily analyses. His report is published as an appendix to that of chief engineer Kienle. From this it appears that the average yield per run of the sand filters was 24,372 million gallons; the average net yield per washing was 14,127 million gallons; the average number of washings per bed was  $27\frac{1}{2}$ , the average number of rakings,  $9\frac{1}{2}$ ; the average number of days in service, 358.17, and the average per cent of time out of service, 2.1. An average of 109 k.w.h. of current was consumed for each washing, and 26 k.w.h. for each raking.

The pre-filters removed an average of 39.8 per cent of bacteria on gelatin, and 95 per cent on bile agar;  $47\frac{1}{2}$  per cent of the turbidity, and 40.7 per cent of the micro-organisms. The sand filters removed 97.9 per cent of bacteria on gelatin, 96.1 per cent. on bile agar; 93.3 per cent of the turbidity, and 100 per cent of the micro-organisms. The combined efficiency of the plant was 99.1 per cent removal of bacteria on gelatin, 99.9 per cent on bile agar; 98.2 per cent. removal of turbidity, and 100 per cent of the micro-organisms.

During the year the beds were raked mechanically with the washing machine, four ordinary farm cultivator teeth being used first, attached to the stirrer wheels of the washing machine, but being replaced with regular machine teeth later, with equally good results. The machine raking proved decidedly satisfactory and better than hand raking, both economically and for sanitary reasons. During the cold winter of 1911-1912 considerable difficulty was experienced in raking on account of the formation of ice. Beginning in January 5, 1912, the temperature dropped to five degrees above zero and remained below freezing almost continuously until February 16th. During this period, heavy ice formed on all of the filter beds, and as the raw water contained an



WILMINGTON EMERGENCY HYPOCHLORITE PLANT



SOLUTION AND MIXING TANKS.



excess of dissolved oxygen, they shortly became air-bound. As the surface of the water on the filters was frozen to a depth of 6 inches, it was impossible to handle the ice manually, and it therefore seemed necessary either to shut down the plant or to use some radical measures. By January 18th some action had become imperative, it was decided to use dynamite, and a half pound stick of 40 per cent Red Cross was placed just below the surface of the ice as an experiment. Following this, shots were made consisting of four one-quarter pound sticks placed under the ice at intervals of 30 feet. This permitted the ice to be removed and the washing machine to pass over the beds, but it was found that the delay in washing the filter had permitted a sufficient negative head to result in air-binding and compacting of the sand to a depth below the reach of the washing machine teeth. This condition was relieved by back filling the beds under pressure of the applied water for a period of 2½ hours, during which time unfiltered water was delivered to the city.

For a short period prior to and immediately following this disturbance of the filter medium of the entire plant, the bacterial efficiency of the filters was very low, and the water delivered to the city was of a decidedly questionable character. It happened that, unknown to the department officials, a serious epidemic of typhoid fever had been in progress in a city on the watershed. The department was advised of this on February 12th, and immediately sterilized the water stored in the various reservoirs with a strong hand-mixed solution of hypochlorite of lime, and a few days later installed a temporary hypochlorite plant at the filter plant. This temporary plant consisted of a circular iron solution tank taken from stock, and an ordinary domestic laundry machine used for a mechanical mixing chamber, this being connected by a belt to the eccentric disc of a triplex power pump used for pumping solution to the plant. This apparatus, including the necessary piping, was installed and operating within twenty-four hours after notice of the pollution of the supply, and was kept working until May 10th, when the filters resumed their normal condition.

The hypochlorite was first added to the water as it entered the final filters. This killed the bacterial action of the filters, and while the effluent was practically free from *B. coli communis*, the bacterial contents of the filtered water was increased. After February 26th, the hypochlorite was added to the effluent from the final filters, and the beds gradually recovered their bacteria efficiency.

A study of the typhoid cases reported by the physicians of the city indicated that the disease had made a very decided attack upon the health of the community before the use of the hypochlorite, but by its use the progress of the epidemic among the consumers of the city water supply was immediately and entirely stopped.

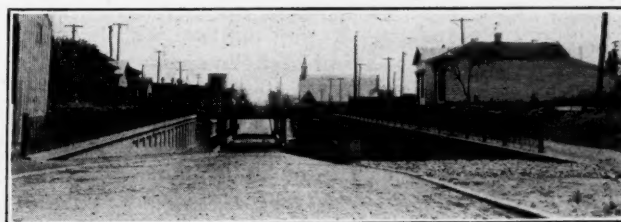
#### **COST OF ICE WATER DRINKING FOUNTAINS.**

The city of Cambridge, Mass., in 1904, operated four drinking fountains, which furnished ice water during the summer months, and in 1907 this number was increased to six. In the summer of 1911, five of these were in operation. The cost of maintaining these, of course, depends very largely upon the cost of ice. These costs have varied from 94 cents to \$1.34 per day per fountain, except that in 1906, when the price of ice was about double what it was both before and after, the cost rose to \$1.57. The figures during most of this time were based on prices of ice varying from 12½ cents to 15 cents per 100 pounds. The fountains are operated an average of about 110 days in the year.

#### **GRADE CROSSING COSTS.**

In a number of states, as outlined in our issue of September 19, 1912, definite methods are prescribed by statute for meeting the expense of eliminating grade crossings, a part of the expense in all cases being placed upon the railroad and part on the city or county. In a number of states, however, no laws have been enacted dealing adequately with this subject, and in these each city must generally make its own arrangements with the railroad for meeting the costs of any grade crossing elimination which is done. The city of Louisville, Ky., is one of those which has arranged for work of this character and under these conditions. When the matter was first considered seriously there seemed to be two alternatives—either to begin legal proceedings against the railroad company under the general police powers which belong to the city, or to endeavor to make a friendly arrangement with the company. It was considered desirable to adopt the latter method, providing any arrangements could be made which seemed reasonable, and the Board of Public Works and city engineer took up the matter with the railroads and the negotiations resulted in an arrangement between the city and the railroad company under which the latter should pay for supporting the tracks during the work, for the construction of the necessary abutments, for all of the superstructure carrying the tracks, and for all of the paving of the street under the tracks. The city was to pay for all of the work on the approaches, including the construction of the necessary concrete retaining walls, iron fences guarding them, the paving of the street and all property damages. As far as the actual cost of constructing the two crossings arranged for at that time, the city had the advantage, inasmuch as, out of the total cost of \$108,903.32, its share under the agreement was only \$46,332.97. The expense of settling property damages was considerably heavier than was anticipated, however, and brought the total cost to the city much greater than that to the railroad.

There was no statutory provision under which the property damages could be ascertained. The city could, of course, have left the matter to the decision of the courts, but there were several objections to this, the chief being the extreme uncertainty as to the decisions of juries, which are apt to favor an individual as against a corporation, either private or municipal. It therefore adopted a method which was apparently calculated to guarantee that it would pay only the actual damage indicated by the difference in the market value of the property before and after the improvements. The city purchased through an agent (to have purchased it directly might have been open to various objections) all of the property affected by the work, before the contracts were let or any general public knowledge gained that the work was to be done; and at the completion of the work the same agent sold the property at favorable times for what it would bring, the difference being settled by the city as damages. Given an honest and capable real estate agent, this method would seem to be as fair a one to all parties as could be devised.



ILLINOIS CENTRAL CROSSING, LOUISVILLE, AFTER GRADE ELIMINATION.

## MAINTENANCE OF ASPHALT PAVEMENTS

### Results of Defects in Foundation, Binder and Surface.— Cracking, Disintegration, Waviness and Scaling— Methods of Making Repairs.

(Continued from page 680).

#### DEFECTS IN CONSTRUCTION.

These may perhaps be more clearly understood by a general discussion of the principles involved and the correct way of carrying them out, and coincidentally calling attention to the particular defects arising from marked departures from standard practice.

Unless the foundation is rigid and of sufficient strength to carry the weight of the traffic passing over the finished pavement no sheet asphalt wearing surface will give satisfactory service. Being plastic at all normal temperatures, the wearing surface will not bridge over any depressions formed by the sinking or failure of the foundation, but will sink with it. The principles governing good foundation work and design need not be considered here except to say that the sub-grade must be well rolled and compacted in the first place, and that good concrete of sufficient strength and thickness should then be put in place and allowed to set before any binder or wearing surface is put upon it. Assuming that the sub-grade has been properly rolled and that the concrete is of the proper thickness and quality, the first point of importance is to see that it is laid to grade. If it is too high in places the thickness of the binder and wearing surface must be reduced, in order that the surface of the finished pavement may conform to the established grade. Any marked diminution in the thickness of the wearing surface will under heavy traffic considerably reduce the life of the pavement. On the other hand, if the concrete is laid too low the thickness of the binder and wearing surface will have to be increased. Within limits, this is not objectionable if the increased thickness is not carried to such an extent as to affect the stability of the pavement, otherwise it will tend to roll and push out of shape under traffic, as previously described. It is usually considered better practice to leave the surface of the finished concrete somewhat rough in order that the binder may key into these depressions and still further resist the shoving action of traffic. After the concrete has been put in place ample time should be allowed for setting, and this will vary with the weather conditions. Concrete laid in freezing weather will apparently set up when in reality it has frozen. When the hot binder and surface mixture are placed on frozen concrete the latter is thawed by the action of the heat and becomes mushy and has not sufficient strength to support the weight of the steam roller. Under such circumstances it is impossible to properly compress the hot mixture. In addition to this, the water set free by the thawing of the concrete is forced into the mass of hot material and more or less of it remains entrained in the mass.

In most forms of construction a binder course is laid directly on top of the concrete, although this is sometimes omitted and a paint consisting of asphalt dissolved in naphtha is applied directly to the dry surface of the concrete and the wearing mixture laid directly on this. It goes without saying that the surface of the concrete should be dry and swept clean before the binder is laid upon it. The binder consists of a mixture of broken stone, preferably the run of the crusher with all particles smaller than 1/10 of an inch in diameter excluded and usually not exceeding 1 1/2 inches in its largest dimension, mixed with sufficient asphalt cement to bind the particles together. Sometimes sand or gravel is added to this mixture to increase its density. Where

stone chiefly of the larger sizes is used without the addition of any sand or gravel it is termed an open binder. The denser mixture produced by the use of better graded stone and the addition of sand or gravel is called close binder. The best modern practice calls for the use of the tight binder, as it gives a much firmer foundation for the wearing surface and will not be broken up and loosened from the concrete by the passage over it of the teams hauling the hot surface mixture. The stone should be hard and clean; i.e., free from adhering particles of dust or dirt, in order that the asphalt cement may firmly adhere to it, and the mineral aggregate must be heated to the proper temperature before mixing it with the hot asphalt cement. Stone which is too cold or damp will not coat properly in the mixer, and binder which is too cold cannot be given sufficient compression upon the street. If the stone is too hot it will burn the asphalt cement and harden it so that the binder will be brittle and difficult to compress. Sufficient asphalt cement should be added to thoroughly coat each particle of the mineral aggregate and make a mass which when rolled will be sufficiently sticky to adhere to the concrete satisfactorily.

A close binder properly made and laid will be superior in many respects to the mixtures which have been laid on a large number of country highways and will carry a fair amount of traffic for a considerable time without suffering any serious damage. Poor binder will break up very easily—sometimes it can be kicked up—and the hauling of the surface mixture over it will damage it very seriously. Surface mixture laid on a binder of this kind which has been badly broken up might almost as well be laid on loose broken stone, and will not give satisfactory service under heavy traffic. The binder should, of course, be thoroughly compressed with a steam roller before laying the wearing surface on it. Lack of compression will produce an unsatisfactory foundation for the wearing surface, and, as previously mentioned, binder which is too cold or made with too hard an asphalt cement or an insufficient quantity of asphalt cement cannot be properly compressed into a dense, tough mass. In hauling the binder to the street over long distances or in very cold weather it may become chilled below the danger point. During the hauling process a certain amount of surplus asphalt cement usually drains off the stone and accumulates on the bottom of the cart or wagon. If these excessively rich portions be laid on the street, what are called rich or fat spots in the binder course will be produced. As the name implies, these are places carrying an excess of asphalt cement. If these are permitted to remain, the surplus asphalt cement will be absorbed by the hot surface mixture when it is placed over them. This will make a soft spot in the finished pavement which will be displaced by traffic and eventually produce a hole or depression in the pavement. They should, therefore, be cut out and replaced with normal binder.

Before laying the surface mixture on the finished binder course the latter should be dry and swept clean of dirt; otherwise the layer of wearing surface will not adhere properly to it. The principles governing the manufacture of a suitable surface mixture are similar to those involved in the binder course, except that, owing to the heavier duty which it is called upon to perform, they are carried further. The particles of mineral aggregate must be sufficiently hard and fine to carry the traffic without being fractured. They must be of such a character that the asphalt cement will firmly adhere to them and they must be so graded in size as to produce a pavement of sufficient stability and density for the purpose intended. The asphalt cement must be



of the proper consistency and the heating and mixing must be so conducted as to produce the best possible mixture. When delivered upon the street, the mixture should be of such a temperature that it can be properly compressed and should be evenly spread by means of hot iron rakes. In many cases the loads of hot surface mixture are dumped directly upon the spot over which they are to be spread. This is bad practice, as the men trample upon it while shoveling and raking it and the rakes do not thoroughly loosen up this trampled material when passing over and through it. Although the mixture is raked to an uniform surface and apparently even thickness before it is rolled, those portions which have been trampled on before and during raking are really covered with a greater quantity of surface mixture than those portions which have not been trampled on and which are covered wholly with what might be termed loose or fluffy mixture. When the roller has completed its work there will therefore be a slight unevenness in the finished surface. Under light traffic this would make no appreciable difference, but under heavy traffic the slight pounding action resulting from this condition would be detrimental and lead to uneven wear of the pavement.

Proper and thorough compression of the finished mixture is very essential as this produces a pavement which in its earliest stages is fit to sustain the heaviest traffic. It is always questionable whether portions which are very lacking in compression will be ground out or eventually consolidated. Under unfavorable conditions the chances are strongly in favor of their being ground out. In those portions of the pavement which are inaccessible to the roller, compression is effected by the use of hot smoothers or tampers, or both. If properly handled, the desired results will be obtained, but if used too hot, they will burn the pavement and cause it to scale or grind out. Hot smoothers particularly are dangerous tools to put in the hands of incompetent or careless workmen.

Extreme care should be taken to insure a proper union between the surface laid on successive days. The first loads laid in the morning at the termination of the previous day's work should be a little hotter than normal so that the hot mixture may soften the cold edge of the pavement and bond perfectly to it. The joint should be bevelled and freshly cut away unless the rope joint or a similar method is employed. The practice of painting the edge of the joint with hot asphalt cement is not to be recommended, as, unless extreme care is exercised, too much asphalt cement will be used and that portion of the pavement will be too rich in bitumen and consequently softer than the rest, which will result in uneven wear and possibly shoving. Great care should be taken not to have any hump or depression when the joint is made.

A brief summary of the chief defects and failures met with in practice and the contributing causes is given below.

**Cracking.**—Cracking of the concrete base, hardening of the asphalt cement through age, use of too hard an asphalt cement. Use of an unsuitable asphalt cement, too little bitumen in the surface mixture, insufficient compression, lack of traffic, improperly constructed joints, extreme and sudden changes in temperature, vibration of street car rails.

**Disintegration of Surface.**—Defective base, unsuitable mineral aggregate, insufficient bitumen in mixture, insufficient compression, use of too hard an asphalt cement, use of overheated mixture, burning due to use of excessively hot smoothers, action of water, action of illuminating gas.

**Waviness.**—Use of an unsuitable sand, use of too soft an asphalt cement, unstable binder, lack of stability in mixture, too great a thickness of mixture, projecting manholes, action of water, action of illuminating gas, uneven raking, too much bitumen in mixture, excessively heavy traffic in one direction over a limited area.

**Scaling.**—Too coarse a mineral aggregate. Too hard an asphalt cement. Action of water. Accumulation of mud. Too little bitumen. Excessively heavy traffic.

#### REPAIRING.

This should be carried on within a reasonable time after defects first make their appearance. If this is neglected, deterioration proceeds much more rapidly than would otherwise be the case. Holes and depressions are increased in size by the passage of vehicles over them and water accumulates in them, accelerating disintegration.

Two distinct methods of repairing are in general use:

1. The pavement is cut out and removed down to the concrete and replaced with new binder and surface.

2. The upper portion of the surface is first heated by suitable appliances and a thin layer of it removed by rakes and shovels. Immediately thereafter, and while the remaining pavement is still warm, a comparatively thin layer of new hot surface mixture is spread over it and raked and compressed in the usual manner followed in the construction of new pavement.

The first method is so simple that but little description of it would appear to be necessary. The defective pavement is cut up into pieces sufficiently small to facilitate its removal, and pried up with crowbars, if necessary. The adjacent edges of the old pavement are trimmed up with an asphalt cutter and sparingly painted with hot asphalt cement, to insure a proper bond between the old and new portions. Under favorable conditions, and when the pavement being repaired is not too old and hard, this painting with asphalt cement may well be omitted. All loose debris is removed down to the concrete and a new binder course and wearing surface is then laid in exactly the same manner as when constructing a new pavement. This method should always be employed in filling up holes and depressions, or wherever the defective pavement is in such shape as to necessitate its complete removal, as in the case of rotting from the bottom upward and waviness, defective binder or foundation, etc.

The second, or surface heater method of repair, is conducted as follows: The surface heater is placed over the defective pavement and put in operation. Superheated steam, hot air or flame is then brought in contact with the surface and is allowed to remain there until the pavement has been softened to the required depth, usually from  $\frac{3}{4}$  of an inch to 1 inch. The heater is then withdrawn and placed on the next spot to be repaired and the softened material completely removed. The space thus left is immediately filled with new hot surface mixture, which is spread, raked and finished in the usual manner. Care must be taken to completely remove all burnt material down to such a depth that the new surface, after compression, will be not less than  $\frac{3}{4}$  inch in thickness, except in a very limited number of cases. Skin patching of less depth than this has not proven satisfactory. In order that repairs made by this method will give satisfactory service, it is essential that the remainder of the old pavement which serves as a foundation should be sound and in good condition and free from water rotting. It is not applicable to the class of repairs rendered necessary by defective binder or foundation, or water or gas rotting. When it becomes necessary to re-surface, wholly or in part, a pavement which has become too hard through age, to give sat-

isfactory service the surface heater method gives very good results, and is much cheaper than a complete removal of the old pavement down to the concrete. By applying the hot new surface mixture to the remaining portion of the old pavement while the latter is still hot from the action of the heater, a satisfactory union between the old and new work can readily be obtained, provided that the hardening of the old pavement has not been allowed to proceed so far that it is impossible to soften it by the application of heat. Cracks may in most cases be more successfully repaired by this method than is possible in any other way. The repairing of cracks satisfactorily is a very difficult matter. If they are cut out and new material put in, this results in the formation of two joints approximately parallel to the original crack. If the pavement being repaired is old and hard, it is difficult to establish a good bond between the old and new portions, and unless this is accomplished two cracks will shortly appear where only one existed before. This is especially the case where long cracks make their appearance at considerable intervals, and in many instances these had better be left until they become sufficiently wide or numerous to render more or less extensive re-surfacing necessary at these places where they occur.

#### CLASSIFYING PAVING COSTS.

The latest report of the Bureau of Construction of Pittsburg, Pa., offers illustrations in the form of a number of tables of the proper method of reporting paving costs by itemizing the several elements entering into such costs. One of the tables is presented herewith, in which are given the dimensions and unit price of the several items of paving proper, grading, curbing, castings and miscellaneous work. Other tables, where repair work involves the construction of concrete foundation in some places only, give the cost of this also per cubic yard, and where old curb was re-cut and re-set the price of this also is given.

In order to show of how little value these tables would have been if only the total cost of the entire work were given, we have added the last two columns of this table, in which is given the total cost per square yard obtained by dividing the total cost of each contract by the yardage of paving. In these few contracts such costs varied from \$2.38 to \$4.94 per square yard. If these figures alone had been given there would have appeared to be great variation in the prices received for paving, whereas, as a matter of fact, the prices for the asphalt paving proper varied only from \$2.10 to \$2.45, and the other prices varied still less. Reference to the last column of the table shows that the cost of the paving proper amounted in some cases to less than 50 per cent of the total cost of the work, and in only one case exceeded 68 per cent of such cost.

It must be apparent that such figures of cost per square yard as are given in the next to the last column, which are those found in a great many municipal re-

ports, are practically valueless for either estimating the cost of future work in the same city, or comparing these costs with the costs in other cities, or of forming any idea as to whether or not the work had been done at a reasonable cost.

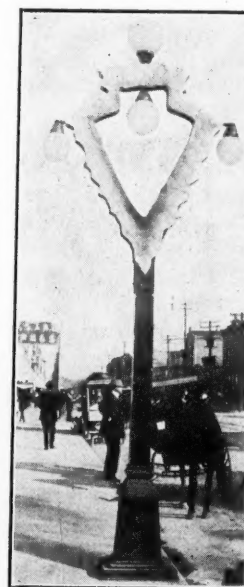
#### WATER WORKS LEAKS.

In the latest report of Edwin C. Brooks, superintendent of water works of the Cambridge, Massachusetts, municipal plant, he states that during the fiscal year in question 2,655 leaks of all kinds were discovered, this being the second largest number ever reported. Of this number 2,351 were found in buildings by the inspectors on their annual canvass, and were required to be repaired by the owners or occupants of the property. The locations of these various leaks were as follows: Baths, 57; basins, 27; faucets, 403; pipes, 26; tanks, 16; wash tubs, 19; water closets, 1,803. Of the 304 leaks found outside of buildings, 233 were on supply pipes in the street, of which 5 were caused by electrolytic corrosion and 3 by subway construction. Thirty-one were on the regular street mains, one on a 40-inch pumping main and one on a 63-inch concrete conduit; 9 were on water hydrants, 4 on standpipes, 14 on gate valves and 6 on supply pipes inside the property line.

During the past ten years, there have been 158 leaks caused by electrolytic corrosion, the maximum in any one year being 24, which number occurred in each of the years, 1904, 1906 and 1907.

#### THE "ARROWHEAD" STREET LIGHT.

An electrolier that is absolutely unique in the way of lamp posts has been designed by Councilman Smith of



SAN ANTONIO  
STANDARD.

San Bernardino, California, and one of the odd standards is shown in this photograph. The arrowhead design has reference to a famous landmark visible from the city, a bald patch on the side of the mountain which is shaped precisely like a gigantic flint tip with which the Indians formerly pointed their arrows. It was held in superstitious awe by the aborigines and is regarded as one of the most remarkable natural curiosities in California. In order to perpetuate the arrowhead as a symbol of San Bernardino, the city fathers plan to have their lamp posts conform to the design described. The standard carries a four-foot outline of the flint, and holds aloft four electric bulbs in translucent globes.

STATEMENT SHOWING AMOUNT OF GRADING, CURBING AND PAVING WITH ASPHALT IN PITTSBURGH, PA.  
Trinidad Asphalt, 2" wearing surface and 1" binder on 6" concrete foundation.

Width roadway, feet.	Length lineal ft.	Sq. yds. of paving.	Price per sq. yd.	Cu. yds. grading.	Price per cu. yd.	Lineal feet of curb.	Price per lineal ft.	Castings.	Miscellaneous work.	Total cost.	Cost per sq. yd., total.	Percent- age paving cost is of total.
30	475.10	1,639.70	\$2.10	2,025.0	\$0.60	983.10	\$0.78	\$72.09	\$2,609.52	\$8,106.80	\$4.94	42
24	551.40	1,600.40	2.45	1,573.0	0.60	862.50	0.75	71.41	548.28	5,974.05	3.73	66
14	624.90	1,015.00	2.20	1,167.0	0.65	1,226.90	0.75	...	310.86	4,222.59	4.16	53
30	320.90	1,160.00	2.15	511.0	0.65	574.70	0.78	35.11	594.46	3,903.99	3.36	64
30	287.20	990.10	2.10	1,856.0	0.60	551.60	0.78	17.83	174.80	3,815.69	3.85	55
15	605.00	1,037.30	2.10	887.0	0.55	1,198.20	0.76	18.99	203.76	3,799.56	3.66	58
30	235.10	818.40	2.16	609.0	0.65	926.60	0.78	35.21	536.53	3,458.08	4.22	51
30	290.60	984.30	2.15	358.0	0.60	508.70	0.78	18.60	457.70	3,204.14	3.25	66
22.4	255.20	699.00	2.15	1,064.0	0.65	494.10	0.78	36.85	510.55	3,127.25	4.47	48
30	242.40	841.00	2.18	360.0	0.60	482.50	0.78	35.18	265.65	2,706.56	3.22	68
30	262.20	890.90	2.38	.....	.....	.....	.....	.....	.....	2,120.34	2.38	100
Totals	4,150.00	11,676.10	Av. \$2.20	10,410.0	Av. \$0.60	7,808.90	Av. \$0.77	\$341.27	\$6,212.11	\$44,439.05	Av. \$3.81	..



# Municipal Journal

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## CHANGE OF ADDRESS

Subscribers are requested to notify us of changes of address, giving both old and new addresses.

Contributions suitable for this paper either in the form of special articles or of letters discussing municipal matters, are invited and paid for.

Subscribers desiring information concerning municipal matters are requested to call upon MUNICIPAL JOURNAL, which has unusual facilities for furnishing the same, and will do so gladly and without cost.

MAY 22, 1913.

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## To Secure Reforestation.

Whether or not all investigators agree that the destruction of the forests on the drainage area of streams is responsible to a considerable degree for increasing volumes of floods and destruction consequent thereto, we believe there are few who are interested in municipal water supplies who do not believe that such destruction is objectionable from their point of view, in that it tends to make the water more roily after rains and also reduces the dry weather flow. With most of the watersheds in private hands, however, it is a problem how to induce the owners to preserve or renew forests. A bill has passed the state legislature and is now before the Governor for his signature which aims at this in New York state. This bill provides that under certain conditions a state superintendent of forests shall have control of lumbering on private lands, these conditions being that the owner who grants this shall be exempt from taxation of growing timber for a period of 50 years, or until the timber is cut, but when the trees are cut, the owner will pay the taxes thereon in one lump sum. Another section provides for reforestation by the state, at cost, of private lands whose owners permit state control of lumbering, the cost of reforestation with interest at 4 per cent. to be paid when the timber is cut. The work of lumbering would be in charge of a superintendent of

forests who shall be a technically trained forester of experience, removable only on charges. Another section provides for compulsory reforestation of unimproved, non-agricultural lands on the watersheds of the state and within the state parks on which the forest cover has been destroyed, thus providing a safeguard against the action of those who do not accept voluntarily the state control otherwise provided for.

As this bill is endorsed by the Camp Fire Club of America, the Adirondack League Club, the New York State Fish, Game and Forest League, the Association for the Preservation of the Adirondacks, and other organizations whose interests are presumably public rather than private or commercial, it is to be hoped that Governor Sulzer will sign this bill, and that the damage which has already been done to the watersheds in the Adirondack and Catskill regions may be remedied in a few years.

## Idaho's New State Highway Law.

The 1913 Legislature of Idaho provided for a State Highway Commission to be composed of the Secretary of State, State Engineer, head of the Civil Engineering Department of the State University, and two other members to be appointed by the Governor. This Commission is given authority to construct or discontinue any of the highways heretofore or hereafter laid out by the state, have general supervision over all the highways and make investigations into methods of road construction adapted to different sections of the state. The Commission serves without pay, except for actual expenses. This law became effective on May 7th of this year. The new commissioners are W. L. Gifford, Secretary of State; Frank King, State Engineer; Professor C. W. Little, Professor of Civil Engineering; Miles Canning and Theodore Turner. A bond issue of \$200,000 was voted by the legislature for the use of the Commission, but the bonds were not sold on the date advertised, and have not yet been taken. In addition to this, there is available an automobile tax which is estimated to yield from \$100,000 to \$200,000.

## Municipal Enterprises in Manchester.

In a recent report of U. S. Vice Consul John W. Thomas, of Manchester, England, a brief statement concerning the municipal enterprises of that city for the year ending March 31, 1913, is given. According to this, the municipal tramways have contributed to the city treasury \$486,650 from their profits for the year, this being practically 5 per cent on the capital cost of the undertaking. The estimated total expenditure for the current fiscal year is \$4,397,962.

Income from sales of current by the electricity department during the year amounted to \$2,264,781. The amount of profit or loss was not stated.

The municipal gas department made a profit during the year of \$1,265,290, which is the largest profit yet realized, the nearest approach to it having been in 1903, when it was \$1,090,096. In 1903, the price of gas was 67 cents per thousand feet, while last year it was 55 cents, and it is proposed to reduce the price again this year. The gas department contributed \$243,325 out of last year's profits to the city treasury, and expects to give a somewhat greater amount next year. A substantial part of last year's profits has been placed in a reserve fund to provide for renewals, increased cost of materials, etc. The total number of gas consumers within the city boundaries is 185,295, an increase of 1,502 during the year. Gas cookers are used to the number of 65,731 and 33,261 gas grillers are used.

ADDITIONAL STREET PAVING DATA RECEIVED SINCE PUBLICATION OF TABLES IN ISSUE OF  
MARCH 6TH.

TABLE NO. 3.—RESURFACING DONE DURING 1912.

City.	Sheet asphalt.	Asphalt block.	Granite, sandstone or other stone block.	Brick or clay block.	Creosoted wood block.	Concrete.	Bitu- lithic.	Bituminous Con- crete.	Mac- adam.	Plain or water- bound mac- adam.	Gravel.	Other kinds.
<b>California:</b>												
Petaluma .....	474	....	....	....	....	....	....	....	....	....	....	....
<b>Illinois:</b>												
Monmouth .....	....	....	....	750	....	....	....	....	....	....	....	....
<b>Indiana:</b>												
Mishawaka .....	974C.	....	....	....	....	....	23	....	....	....	....	....
<b>Iowa:</b>												
Burlington .....	....	....	....	....	22,000C.	....	....	1,430C.	5,000C.	....	....	....
<b>New York:</b>												
Buffalo .....	71,753C.	....	....	20,283C.	....	....	....	....	....	....	....	....
Borough of Manhattan.....	436,558C.	32,638C.	260,596C.	....	125,148C.	....	....	....	1,800	2,500	....	....
Plattsburg .....	....	....	....	....	1,979	....	....	....	....	....	....	....
<b>Oklahoma:</b>												
Bartlesville .....	....	....	....	14,200	....	....	50,630	....	....	....	....	....
<b>Pennsylvania:</b>												
Allentown .....	....	....	....	11,440C.	....	....	....	....	14,670M.	....	....	....
Easton .....	....	....	....	....	....	....	....	....	....	....	....	....
<b>South Dakota:</b>												
Lead .....	....	....	....	....	....	....	....	....	....	666	....	....
Sioux Falls .....	....	....	....	....	....	6,000C.	....	....	....	....	....	....
<b>Texas:</b>												
Laredo .....	....	....	....	....	....	....	....	....	....	....	4,000M.	....
<b>Washington:</b>												
Spokane .....	1,716	....	97	....	....	....	....	....	....	....	....	....
<b>Wisconsin:</b>												
Milwaukee .....	....	....	13,075	8,044	....	....	....	396,573	109,846	....	....	....
<b>Canada:</b>												
Toronto, Ont. ....	14,207	....	....	....	....	....	....	....	....	....	....	....

TABLE NO. 4.—WORK CONTEMPLATED FOR 1913.

CITY.	Sheet asphalt.	Asphalt block.	Granite, sandstone or other stone block.	Brick or clay block.	Creosoted wood block.	Concrete.	Bitu- lithic.	Bituminous Con- crete.	Mac- adam.	Plain or water- bound macadam.	Gravel.	Other kinds.
<b>Arizona:</b>												
Phoenix .....	....	....	....	....	....	18,000	100,000	....	....	....	....	....
<b>Arkansas:</b>												
Helena .....	....	....	....	25,000c	....	....	....	....	....	....	....	....
<b>California:</b>												
Pasadena .....	37,760	....	....	1,648	....	....	....	65,750	1.44	....	....	5.0
Redlands .....	....	....	....	....	....	....	....	....	32.0	....	....	....
Santa Barbara.....	8.75	....	....	....	....	....	....	....	....	....	....	....
Santa Rosa.....	37,000c	....	....	....	....	....	....	....	....	39,000c	....	....
<b>Colorado:</b>												
Denver .....	....	....	12,000	13,900	....	118,000	....	43,000	142,500	237,300	....	....
Pueblo .....	....	....	....	....	....	....	....	....	....	....	170,000	....
<b>Connecticut:</b>												
So. Norwalk .....	....	....	....	....	5,800c	15,000c	....	....	....	....	....	....
<b>Georgia:</b>												
Macon .....	....	....	....	45,000	....	31,000	....	....	....	....	....	....
<b>Illinois:</b>												
Aurora .....	3.5	....	0.5	....	....	....	....	....	....	....	....	....
Marion .....	....	....	....	....	....	....	....	....	10,560	....	....	....
Monmouth .....	....	....	....	20,000	....	....	....	....	....	....	....	....
<b>Indiana:</b>												
Mishawaka .....	20,165	7,700	....	....	....	....	....	....	....	....	....	....
<b>Iowa:</b>												
Burlington .....	....	....	....	....	....	40,000	....	....	....	....	....	....
<b>Kansas:</b>												
Fort Scott.....	....	....	....	30,000	....	....	....	....	....	....	....	....
<b>Massachusetts:</b>												
Easthampton .....	....	....	....	....	....	....	....	0.5	....	....	....	....
<b>Minnesota:</b>												
Okatoma .....	....	....	....	....	....	1,000	....	....	....	....	....	....
<b>Montana:</b>												
Helena .....	....	....	....	15,000	....	....	....	....	....	10,000	....	....
Missoula .....	....	....	....	14,000a	14,000a	....	14,000a	....	....	....	....	....
<b>Nebraska:</b>												
Norfolk .....	....	....	....	....	....	....	....	45,000	....	....	....	....
<b>New Jersey:</b>												
Atlantic City.....	....	....	....	12,800	....	....	....	....	....	....	10,000	....
<b>New York:</b>												
Plattsburg .....	....	....	....	....	....	....	....	....	....	....	....	....
Buffalo .....	89,453c e	....	....	10,935c e	....	....	....	10,000	....	....	....	....



TABLE NO. 4.—WORK CONTEMPLATED FOR 1913.—(Continued.)

CITY.	Sheet asphalt.	Asphalt block.	Granite, sandstone or other stone block.	Brick or clay block.	Creosoted wood block.	Concrete.	Bitulithic.	Bituminous Concrete.	Macadam.	Plain or water-bound macadam.	Gravel.	Other kinds.
<b>Ohio:</b>												
Fostoria .....		4,000	....	30,000	....	....	....	....	....	....	....	....
<b>Oklahoma:</b>												
Bartlesville .....		....	....	1,000	....	....	20,000	....	....	....	....	....
<b>Pennsylvania:</b>												
Allentown .....	47,391c	....	....	....	....	....	....	....	....	....	....	....
Easton .....	....	....	....	7,000	....	4,000	....	10,000	....	....	....	....
Corry .....	....	....	....	7,979	....	....	....	....	....	....	....	....
Sharpville .....	....	....	....	1,600	....	....	....	....	....	....	....	....
<b>Rhode Island:</b>												
Providence .....	1,658	....	13,783	....	20,989	....	....	....	....	....	....	....
<b>South Dakota:</b>												
Sioux Falls .....	....	....	....	....	....	75,000	....	....	....	....	....	....
Lead .....	....	....	....	....	....	1,777	....	....	....	....	....	....
<b>Texas:</b>												
Fort Worth .....	10,800	....	....	59,220	18,000	1,600	137,880	....	1,750	....	....	....
<b>Washington:</b>												
Spokane .....	4,170	....	....	2,471	....	....	....	53,877	....	14,170	....	....
<b>Wisconsin:</b>												
West Allis .....	60,000a	....	....	60,000a	....	....	....	....	....	....	....	....
<b>Wyoming:</b>												
Sheridan .....	....	....	....	....	20,000a	20,000a	20,000a	....	....	....	....	....
<b>Canada:</b>												
Toronto, Ont. ....	185,775	10,000	....	32,461	....	17,741	111,518	....	34,044	7,000	....	....

a—One of these will probably be selected. c—By contract. e—Contracted to date; more contracts probable.

### STREET WORK IN PASSIAC.

By William Reid, Director of the Department of Streets and Public Improvements.

During the year 1912 the City of Passiac, New Jersey, completed a number of important improvements to its street and sewer systems.

Among the various types of pavements laid, permanent and semi-permanent, were the following: Sheet-asphalt, bitulithic, bituminous concrete and bituminous macadam. Water-bound macadam was laid upon one street which is the boundary between this city and the township of Acquackanonk in the county of Passaic, and was laid to conform to the character of pavement which the township trustees were obliged to lay. It will be the last water-bound macadam which the board of commissioners of this city will construct.

The first three of the above mentioned pavements were laid upon a four and one-half inch Portland cement base. The bituminous macadam was an average of seven inches in thickness and was built in accordance with the penetration method.

The following table gives the total number of square yards of each kind of pavement laid and the cost of the same:

Class of Pavement.	Sq. Yds.	Miles.	Cost.
Sheet-asphalt .....	14,187	0.29	\$30,128.02
Bitulithic pavement .....	16,411	0.35	41,999.45
Bituminous concrete .....	9,949	0.21	19,766.23
Bituminous macadam .....	44,809	0.94	54,307.56
Water-bound macadam .....	4,074	0.49	4,338.90
Total .....	89,430	2.28	\$150,540.16

Prior to the adoption of the commission form of government in Passaic and the assumption of office by the commissioners no particular effort was ever made to force the completion of any improvement within the time limit specified in the contracts. A reasonable number of consecutive working days is now allowed the contractors in which to complete their work and they are held strictly to account, the result being that never in the history of the city have street improvements been executed in so prompt a manner.

The specifications for pavements have been prepared with the view of admitting most asphalts, under proper tests and requirements, of course, and we are now having

our pavements laid at much lower figures than ever before, and the quality of the work is satisfactory.

The streets of the city were cleaned last year at an expense of fifteen hundred dollars less than the amount paid for the same service during the year 1911. This spring the board will purchase a street sweeper and also an outfit for repairing the bituminous macadam. Last year we bought a steam road roller and the wisdom of its purchase was soon demonstrated in the better appearance and condition of the macadam in the residence section of our city. A considerable saving in the cost of repairs to the old macadam was effected by utilizing the best of the macadam from the streets which were being permanently paved.

The collection of garbage and ashes last year was made at a reduction of over eight thousand dollars as compared with the cost of collection the previous year. The service was satisfactory, the volume of ashes and garbage was greater and there were fewer complaints of the service as compared with conditions, etc., when the work was done by the city or by contract previously.

The average monthly collection of ashes and garbage during 1912 was 4,728 cubic yards and the average weight per cubic yard was 956½ pounds.

### MAINTAINING MOTOR FIRE APPARATUS.

Watertown, N. Y., put an automobile combination chemical, hose and pumping apparatus into service June 25, 1912, and in the report of the Fire Department for that year Chief Morrison states that during the six months and five days the operation for actual fire service cost: For 81 gallons of gasoline, \$11.34; 15 gallons of oil, \$5.75; 5 pounds of grease, 60 cts.; a total of \$17.69. During the previous six months the horse-drawn apparatus which this replaced cost \$228 for maintenance of horses, \$6.00 for coal and \$10 for repairs, in addition to \$373 for the wages of two drivers.

The chief's automobile had been in constant use almost every day for nearly three years and had run a total of 3,052½ miles, at an average cost of 19½ cents a day. The expenses of 1912 were \$56.80 for tubes, patches and replacements of tires; \$88.13 for repairs to axle, gas lights, spark plugs, chamois skins, sponges, etc., and \$38 for painting and nickel plating.

# NEWS of the MUNICIPALITIES

Current Subjects of General Interest Under Consideration

by City Governments and Department Heads

## ROADS AND PAVEMENTS

### Walk to be Sign Board.

Bethalto, Ill.—The village of Bethalto has adopted a novel plan to replace a wornout sidewalk the village treasury is unable to finance. Soliciting committees have been sent out and blocks of the sidewalk 40 inches square are being sold. Residents, officials and business men of Bethalto are being invited to subscribe for blocks. Business men in neighboring towns have been requested to contribute. They will be given permission to have their advertisements or trademarks inscribed in the concrete.

### Plan Submitted for County Road Upkeep.

San Diego, Cal.—A plan for the systematic maintenance of the county roads which were built with the bond issue of \$1,250,000 and the work to be directed by a general road superintendent, who shall be a trained road builder and engineer, has been presented to the county supervisors in a resolution by a joint committee of the associated commercial organizations of San Diego. The committee was present and advocated the acceptance of the plans. At the end of the hearing the board voted a resolution introduced by Supervisor Fisher thanking the committee for interesting themselves in county affairs and pledging the board to meet with the wishes of the committee "as much as possible and as soon as possible."

### Fallway to Be Opened by June 15.

Baltimore, Md.—After an inspection of the work on the Fallway, City Engineer McCay announced that the thoroughfare would be open to the public from Baltimore to Madison street by June 15. With the completion of that section of the new street from Bath to Madison street, the thoroughfare will have been totally completed, with the exception of the viaduct from Madison street to a point just below Biddle and the portion extending about 200 feet south of Baltimore street. This latter section will be completed early in July, while it is expected that the viaduct will be completed some time next spring.

### Oiling of State Highways.

Albany, N. Y.—John N. Carlisle, new state highway commissioner, has told the various division engineers that the work of oiling the improved highways of the state and putting them in proper repair, must be expedited. The engineers told the commissioner they were of the opinion the work could not be completed before the latter part of July. However, the superintendent insisted it must not be delayed longer than July 1.

### To Show Model Roads at Panama Exposition.

Washington, D. C.—Arrangements are to be made by the United States Department of Agriculture, through Logan Waller Page, director of the office of public roads, to place on exhibition at the Panama-Pacific Exposition in 1915 the greatest collection of road models ever displayed in any part of the world. The models will furnish exact duplicates of the old Roman roads, French roads and all of the various types of modern roads, together with miniature models of road machinery operated by electricity. The office of public roads made an exhibit of road models for the first time at the Alaska-Yukon-Pacific Exposition. The aim was to put on view such striking examples in miniature of road models that visitors would not only appreciate the beneficial effects of improved highways, but would, at the same time, be able to understand the methods of their con-

struction. Since the Alaska-Yukon-Pacific Exposition closed the exhibit has been displayed at Omaha, Neb.; during the National Corn Exposition; at Knoxville, Tenn., during the Southern Appalachian Exposition; at Chicago, Ill., during the National Land and Irrigation Exposition; at New York City during the Travel and Vacation Exposition and the Domestic Science Exposition; at Atlantic City, N. J., during the American Road Congress; at Lethbridge, Alberta, during the International Dryland Congress; at Buenos Ayres, Argentina, during the International Agriculture Exposition; at Turin, Italy, during the International Exposition, and at various other expositions and fairs. The collection has since been greatly augmented until every single type of road is now represented and every known device used in the making of roads has been reproduced in miniature.

### Adopt New Plan of Maintaining Roads.

Yorktown, Va.—York county has adopted a new method of working its roads, having just purchased a lot of mules and machinery for that purpose. It is believed that this will prove more effective and economical than the old way of letting out roads to people who were equipped to do the work. D. R. Norment, formerly chairman of the board of supervisors has been recently appointed as superintendent of roads.

### First Section of Road Ready.

Bristol, Va.—The first section of the new macadamized road that will lead from Bristol to Abingdon is now practically completed, and will be opened. The Bristol, Va., street force joined its section of the road, leading from Massachusetts avenue to the point where the county left off. A few more loads of fine stone and a little more rolling will mark the completion of the city's section of the highway. Superintendent W. W. Jones is in charge of the county work.

### Engineer Oldershaw's Report.

Hartford, Conn.—The fifth annual report of the engineering department of the city was submitted by City Engineer Frank H. Oldershaw to Mayor Joseph M. Halloran. The report says: "The year has again proven the same as the past year, in that the volume of work accomplished in the several departments shows a very decided increase over that accomplished in any previous year. A large amount of street work has been done during the year which has greatly improved the sections affected. Street work was delayed at the beginning of the season by the curbing not being completed on the streets where the work was ordered to be done, but all the work laid out this season was finished. Bituminous macadam, by the mixing method, was tried for the first time and has shown good results, except for one section which will have to be repaired by the contractors in the spring. A few warm days this spring will flush the asphalt to the top of this pavement and place it in fine condition. There is one point in connection with our street work that I cannot lay to much stress on, and that is that the work shall be commenced as early in the season as possible and stop before any frost or cold weather, as they should have a chance to season before the winter sets in. Especially is this true of permanent pavement or any bituminous work. The work done on South Main street was done altogether too late in the season, not being finished until December, and this is the main reason of defects noticed in the work. During the year permanent pavement, sheet asphalt, was laid on two streets. Eight streets were macadamized, one of which the surface was



bituminous macadam; two streets were resurfaced, and six streets were graded to the official grade, all the work being done by the street department with the exception of the permanent pavement on Arch and East Main streets, which was done by the Southern New England Paving company of Hartford and the macadam on Lincoln street and bituminous macadam on South Main street, both of which were done under contract by the Pierson Engineering company of Bristol.

All the work being done according to plans and specifications drawn up by the city engineer. This makes a total of eight-tenths of a mile of permanent pavement and three and one-quarter miles of macadam; three-tenths of a mile of re-surfacing and eight-enths of a mile of streets graded during the year, or over five miles of streets improved.

#### Says Concrete Paving Is Best.

Grand Forks, N. D.—Concrete pavement is best suited to North Dakota cities, according to Mayor M. F. Murphy of Grand Forks, based upon the experience of that city. Mayor Murphy, in response to a request for information on the paving question, made by several North Dakota cities contemplating work of that nature, declares that plain concrete, as used in Grand Forks to be the cheapest and as durable as any of the several other pavements. Six different kinds of pavements have been laid in Grand Forks.

#### Flood Did No Damage.

Middletown, Conn.—New Haven motorists are rejoiced to find a warrenite pavement on the old macadam crossing between Middletown and Cromwell. The roadway at the point stated, had become well nigh unendurable. The new pavement has been laid upon the old macadam and the improvement is a notable one. A portion of this road was flooded at the time of the recent rise in the Connecticut river but no material damage was done to the highway by the receding waters.

#### City to Use Log Drags.

Duluth, Minn.—The split log drag will henceforth play an important part in the maintenance operations of the division of public works. Commissioner Murchison and Supt. Bloedel have determined to use the drags on all the country roads leading to or from the city. Arrangements are now being made to have the split log drags put into operation after every rain, when they will be most effective. The surfaces of the roads will be soft and the apparatus will be able to do much more good than when they are dry and hard.

The drags have been found to be highly efficient and can be used at comparatively small expense. Teams and employes of the department will operate them in most instances but in a number of cases arrangements may be made with settlers living in the vicinity of the highways. They are interested in having the roads in the best possible shape and working under the direction of the works division they could probably give complete satisfaction. One of the chief advantages of the split log drag is that it keeps up the crown of the road and eliminates the ruts. With the crown maintained the drainage is always free, resulting in a driveway that dries quickly and is always in the best shape for use.

#### Plan Ceremonial for Road Opening.

Niagara, Falls, N. Y.—The Niagara Falls Automobile Club and the Automobile Club of Buffalo will co-operate in celebrating the official opening of the Niagara Falls-Buffalo boulevard. This was decided upon at the annual meeting of the Falls club. The meeting was adjourned until May 20th, when the date for the ceremonies will be fixed. The club will ask the Board of Supervisors to make arrangements to police the boulevard and have the towns through which the state road passes pay the officers. Buffalo, the Tonawandas and Niagara Falls have motorcycle cops on duty within the city limits to prevent reckless driving. "Under the Callan law, constables get no fees for arrests of reckless drivers," said Secretary Eaton. "Be-

cause of this, something has to be done to prevent the killing of pedestrians and autoists by drunken drivers, who have no regard for speed regulations," said Secretary-Treasurer R. Max Eaton of the club.

## SEWERAGE AND SANITATION

#### They Swat 4,630 Flies.

Columbus, Ind.—A fly swatting contest, conducted by Principal Houk, of the eighth grade, of the Central School here, closed after having been on since April 21. A total of 4,630 flies were killed by pupils of that grade.

#### City Will Set the Example.

Duluth, Minn.—The common drinking cup, prolific spreader of disease, is to be tabooed in Duluth on and after July 1, next. Acting under the authority of the new state law, Commissioner Hicken of the Public Safety division has directed Dr. H. E. Webster, director of public health, to have them removed from all public buildings, department stores and lodging houses. Commissioner Hicken states that the city will set the first example. Under his orders the use of the cups is to be stopped in all the fire halls and the police station. They will be replaced with the sanitary drinking fountains. It is now possible to secure sanitary drinking attachments for fixtures which are already installed, which will bring the cost down to a small figure. In the city hall at least two fountains will be installed, and it will only be a short time before the drinking cup is a thing of the past in all institutions owned or controlled by the city.

#### Sewerage System After Thirteen Years.

Lake Charles, La.—The completion of the sewerage system, after an agitation extending over a period of thirteen years, is being hailed with delight by the citizens of Lake Charles. Twenty-seven miles of piping and three settling tanks constitute the principal parts, while there are a good many miles of laterals besides, and a discharge pipe into the river below the plant of the Ice, Light & Water Works Company. By the method of treatment employed the sewage is made harmless, so as not to contaminate the water in the river, or in the lake, which it reaches after flowing through the river for seven miles. Property owners on the lake front and those who enjoy bathing in the lake during the summer time are in particular gratified over the completion of the sewerage system. For many years they have had a constant and vigorous fight to keep the waters of the lake pure and free from sewage. The new system will do away with the annual struggle to keep the water from stagnating, and one source of contention will be removed. The connecting of houses and business block with the system will begin shortly.

## WATER SUPPLY

#### Order Water Rates Reduced.

Pine Bluff, Ark.—The City Council has passed an ordinance requiring the Pine Bluff Water Company to reduce water rates to private consumers from 40 cents to 25 cents per thousand up to 10,000 gallons.

#### Break in Reservoir Frees City's Water.

Archer City, Tex.—The dam of the big city reservoir broke May 4, and 90,000,000 gallons of water were lost. This followed a 3.82-inch rain the night before. The City Council had bought a tank and tower, pump and engine, and water mains were to be laid at once, giving the town a splendid water works system. The rain filled the big reservoir for the first time since it was built a year ago, and the citizens viewed the immense body of water with pride in the morning. About nine o'clock a small leak was found in the dam at its deepest part, and the word was spread through the town. Scores of persons rushed to the reservoir and struggled to stop the flow. Despite their

hard fight, however, the water soon cut a large hole through the dam. A contract will be let by the City Council for the reconstruction of the dam, but the water works system will be delayed several months.

#### **Pumping Plant Placed.**

Santa Cruz, Cal.—At a special meeting of the City Council the report of the special committee appointed to arrange for the placing of a pumping plant along the San Lorenzo River was accepted. The installation of the centrifugal pump with a capacity of 500 gallons a minute will materially increase the water supply of the city which is running very short.

#### **Work on New Water System.**

Appalachia, Va.—Following the election at Appalachia, in which the town voted bonds to the amount of \$21,000 for the purpose of providing sewerage, the Clear Creek Water Company has commenced the work of putting in water works in the town. This company has had a franchise for this purpose for quite a while, but was waiting for the town to provide the proper sewerage before commencing the work. The water will be piped from a point on Clear Creek high enough to furnish the proper pressure to push the water to the highest points in town and for fire-fighting purposes. Frank Schefold, of New Albany, Ind., has been appointed superintendent of construction and has already a large force of men at work, and it is the intention of the company to have the entire system completed by early fall.

#### **Reservoir Work Will Be Rushed.**

Fort Worth, Tex.—A force of at least 175 men will be placed at work on the West Fork reservoir within the next few days, and it is thought that within 45 to 60 days a storage basin, capable of holding one billion gallons, will be prepared. Plans as outlined by members of the City Commission and the Board of Engineers call for the doing of from 50,000 to 60,000 cubic yards of earth work and the building of a dam 12 feet in height across the spillway. The intention of the commissioners in constructing the basin is to provide for the storage of as much water as may be needed during the hotter days of the summer. The water will be held in reserve and when used will be filtered. The basin will be easily accessible to the filtering plant. W. B. Smettem, who was appointed superintendent of the construction work will be on the grounds during the construction and push the labor as rapidly as possible.

#### **Electricity Causes Pipe Break.**

Salt Lake City, Utah.—To the effect of electric current upon iron pipe is attributed a break in a 6-inch city water main at Fourth West and Seventh North one morning last week, which washed out the street and shut the O. S. L. yards out of water for four or five hours. Superintendent C. F. Barrett had a section of the water main cut from the pipe line when the repairs were made and took it to the Water Department office for examination. It was found that where the pipe had broken a hole had been eaten through it by electrolytic action of current that found its way to the pipe from some car line or other current conductor in the neighborhood. In spots the iron has been so affected that it could be picked to pieces with the point of a penknife. Superintendent Barrett called attention in his annual report to the damage to water pipes from electrolysis and recommended that action be taken to compel electric companies and car companies to install binder and return wires so that superfluous current may be conducted back to the power station direct without being permitted to percolate through the earth and damage the water pipes.

#### **Water Pumping Record Broken.**

Phoenix, Ariz.—More water is being pumped through the city water mains than ever before in the history of the city Water Department. With no unusual demand

from any one single cause, 3,700,000 gallons were pumped for one single day. And with the approach of the warmer months and the inauguration of sprinkling it is believed this record will be a thing of the past. It is pointed out that, although Phoenix never had a water famine, the city Water Department intends to see that there is no unnecessary waste. Particular attention is to be given this summer to the use of the city water for sprinkling lawns and watering trees upon residence property. It is stated that very often the charge of 80 cents per month for sprinkling privilege does not at all compare with the service afforded. Many single hydrants are assessed \$1 per month for regular service where the water used does not anywhere near approach that used in sprinkling from another hydrant.

#### **Water Department Merged with Public Works.**

Canandaigua, N. Y.—The village of Canandaigua has become a city of the third class by a special act of the legislature, and the Water Department is merged with the Street Department into a Public Works Department, thereby abolishing the Board of Water Commissioners and the office of Water Superintendent. George R. Ellis, the superintendent, has been connected with the Water Department for the past thirteen years.

#### **Lose Privilege of Using City Water.**

Salt Lake City, Utah.—The new water ordinance recently passed gives the Superintendent of Water Works authority to compel installation of a meter by a consumer whenever in his opinion such installation is necessary. The superintendent declares that waste of water, especially from oversprinkling, is one of the most serious drains with which the department has to contend in preserving the water supply. Some forty water users, who were found using more water than the Water Department believed was necessary, have had their supply shut off. Before they will be able to have it turned on again they will be compelled to install meters. This action was in line with the announced intention of the department officials to place a check on alleged waste by consumers. Pursuant to his announcement, Superintendent C. F. Barrett sent out shut-off crews and spread the notice everywhere that all waste of water would bring the immediate penalty of a shut-off and consequent enforcement of use of a meter.

#### **Suggests Installation of Meters.**

Fargo, N. Dak.—In the message by H. F. Emery, President of Fargo's first City Commission, read on the occasion of his taking the chair to administer the new form of city government, he says, in referring to the water works system: "After a careful study of the situation, I am satisfied that three changes should be inaugurated at once. First, that we fix by ordinance a meter rate; second, that all new connections be required to install meters; third, that we change the flat rate. This conclusion is reached from the fact that we are now pumping about eight hundred million gallons per annum, while we ought not to be pumping over six hundred million gallons per annum, showing a loss of 25 per cent. By fixing a meter rate it will give those wishing to economize the privilege of so doing without working any hardship upon those who wish to continue on the flat rate."

#### **Twenty-Seven Miles of Cast Iron Mains Laid.**

Fort Dodge, Ia.—The city Water Department constructed last year 10,043 feet of additional water main, according to the annual report of John W. Pray, water superintendent. Eleven new fire plugs were placed and seven old hydrants replaced with new ones. There are now 172 fire hydrants in the city. In all there are twenty-seven miles of cast iron mains in Fort Dodge from four to twelve inches in diameter. Mr. Pray estimated the new reservoir will be in service within sixty days. He estimates the cost at \$27,000. He told of the treatment of ten pounds of hypochloride of lime in every one million gallons of water pumped since October, 1912, as a germicide. The big pump



has been overhauled and is in good condition. The boilers are more than twenty years old and should be replaced, he says. During the past year 375 million gallons of water have been pumped by the city pumping station. The number of tons of coal used has been 1,545. The total expenses of the department have been \$42,666.75. John Sumey, meter reader and repairer, reported that 183 taps for individual water service have been made the past year. This report shows the number of new consumers.

#### **Wants Meter Readings Placed on Water Bills.**

Baltimore, Md.—Charles E. Phelps, chief engineer of the Public Service Commission, has recommended that the commissioners require water companies to place on all water bills the meter readings. He said he had found that many complaints were due to the fact that water companies did not place the meter readings on the bill when the consumption for the month does not exceed the minimum quantity for which a charge is made.

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## **STREET LIGHTING AND POWER**

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#### **Lights Installed in Business District.**

Fulton, N. Y.—Several ornamental street lights are being installed in Cayuga and First streets by the Fulton Heat, Light & Power Company. The Chamber of Commerce has several times discussed the need for more street lights in the business section. The company has detailed men to make an inspection of all the consumers' meters.

#### **New Lighting System Now in Use.**

Newport News, Va.—With the turning on for the first time of the incandescent lamps, the entire new street lighting system of the city is in use and it presents a vast improvement over the old system. On all streets and avenues except Washington and Jefferson avenues, incandescent globes replace all of the old arcs and there are a number of new incandescent lamps where there were no lights heretofore.

#### **Worcester Merchants Go On Street Light Strike.**

Worcester, Mass.—Worcester merchants joined in a novel protest when they turned off the current of all electrical signs on the front of their stores in an attempt to induce the city authorities to better the lighting service in the business district. Large electrical signs which for years have illuminated Front and Main streets were dark during the evening. Members of Worcester Merchants' Association have endeavored for the past three years to induce the city to increase the number of arc lamps in the downtown district. Recently the Worcester Chamber of Commerce joined forces with the merchants. The current was turned off upon the suggestion of an electrical expert.

#### **City Plunged Into Darkness by Cat.**

London, England.—At a meeting of the lighting committee of the Cardiff Council the engineer reported that the reason for the city being plunged into darkness one night last week was that the works cat found its way to high tension gear and walked across the cables. The cat was killed, copper wires were burned and the connections cut.

#### **Merchants Plan Lighting System.**

Bridgeport, Conn.—There is a movement now afoot among some of the local merchants and business men of Fairfield avenue, which if successfully carried out, will give to at least one section of Bridgeport a "Great White Way." Karl O. Cyrus is the father of the plan, and is very enthusiastic in predicting its success. Mr. Cyrus' idea is to use the trolley poles on Fairfield avenue, between Courtland and Main streets, for lighting poles. He plans to affix to each trolley pole four 60 candle-power tungsten incandescent lamps, the same to be supplied with power from a cable to be laid under the sidewalks. If the plan is carried out, each of the business men along that portion of Fairfield

avenue will pay his share of the expense of installing and maintaining the lighting system. It will cost the city nothing, and, as Mr. Cyrus said, will show the city officials what can be done when a few men get together and really try. Superintendent Chapman of the Connecticut Company has been interviewed on the matter by Mr. Cyrus, and has granted permission to use the trolley poles for the lights, but he has agreed to co-operate with the business men in every possible way and has said he would gladly have the poles set in perfect alignment.

#### **Commence Installation of Underground System.**

Springfield, O.—The work of installing the beginning of the underground system of the Springfield Light, Heat & Power Company will commence this week, according to plans announced by Manager Ware Parsons of the company. During the coming summer the company will install over 4,000 feet of underground work, in the center of the city, and will begin what the engineers of the Hodenpyle-Hardy company hope to make a complete system of conduits, which will eliminate all overhead wiring in the business section. According to the terms of its franchise, the company is required to install 2,000 feet of underground work each year. Last year was the first in which the requirement was operative, but the company at that time was without funds for such an undertaking. Since the local company became a part of the holdings of the Hodenpyle-Hardy Company, however, the management has arranged to make good last year's deficit, and at the same time put in this year's portion of the work. The construction work will commence in North street, where the street will be paved following the completion of the conduit. From North street two lines will be run into the business section of the city. One will be placed in Primrose alley, and the other in Fisher street, the former extending to the Arcade and the latter to the city building. The G. M. Gest Company, of New York, has been awarded the contract for the work by the company. The firm specializes in the construction of underground conduits.

#### **Sell Calaboose to Obtain Funds for Street Lighting.**

Kingston, Mo.—Kingston has sold its calaboose to obtain funds to light its streets. The sale was decided upon after the town marshal reported to the City Council that the "lock-up" had not held a prisoner for six months. The city needed money immediately for lights, so an auctioneer was called upon to dispose of the building. "Uncle Bole" Brown bought it for more than enough to complete the lighting. "I will use the cells as a chicken house," said Mr. Brown.

#### **Report Shows Lighting Plant Is Profitable.**

Pasadena, Cal.—Profits derived by the city from the operation of the municipal lighting plant from March 29, 1912, to March 29, 1913, totaled \$63,364.90, according to a report made by expert accountants employed to audit the books of the concern. The findings of the accountant repudiate reports widely circulated by enemies of the municipal plant that the city's lighting system was operated at a financial loss and that former Mayor William Thum and C. W. Koiner, superintendent of the plant, had juggled figures in making the system show a profit. According to the report the profits shown are after bond interest and other charges, totaling \$95,679.32, had been paid. The value of the plant is fixed by the accountants at \$580,745.23.

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## **FIRE AND POLICE**

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#### **Police Must Sprint.**

Wichita, Kan.—Members of the Wichita police force must be able to run 100 yards in 16 seconds or less. This is a civil service regulation based upon the theory that offenders against the law usually are fast runners. With the sidewalks lined with spectators, five young men who were candidates for policemen's star tried to qualify in a

100-yard dash on one of the principal streets of Wichita. One man crossed the finish line in 14 seconds, two were one second slower, and the others failed to finish in the prescribed limit.

#### Firemen to Resign.

Warsaw, Ind.—The Warsaw volunteer firemen dislike the change ordered by the City Council in the matter of allowing mortgage exemptions. Many of the city's oldest and best firemen have announced their intention of resigning. For years the city has allowed all firemen tax exemption to the limit of \$6.50. This year many firemen were cut down to one-sixth that sum.

#### Portland, Ore., to Have Police Force of Boys.

Portland, Ore.—After a conference between police and Juvenile Court officials, it was announced that a boy police force would be organized in Portland. It is proposed to have a boy chief of police, with captains, sergeants and other sub-officials, for each ward of the city. The boy officers, who will range from twelve to eighteen years of age, will be provided with stars bearing the inscription, "Portland Junior Police," and a number. A complete code of procedure to govern the force will be adopted. With certain exceptions this code will not permit the boy police actually to make arrests, but they will report any youthful offenders discovered to their superiors, who will notify the police department, and a regular officer will be sent to make the arrests.

#### City Officials See Demonstration of Engine.

Pittsburg, Pa.—A contrivance consisting of an automatic chemical wagon and fire engine, designed to do away with acids and save expense by combining the two, was given a tryout before the heads of the fire bureau and a number of Councilmen at the Monongahela wharf. Half a hundred tar barrels were piled together with a quantity of loose timber, saturated with oil and ignited. The flames were allowed to reach their height, and, according to the records of the fire officials, the flames were under control in 40 seconds and the blaze extinguished within five minutes. The machine is an invention of J. A. Thomas, of Zanesville, O. Instead of acids being used, bi-carbonate of soda is drawn automatically from a hopper and mixed with the water as it leaves the engine. The heat of the fire, the inventor claims, will liberate the carbonated gas from the mixer.

#### Fireman Invents Automatic Chain Release.

Perth Amboy, N. J.—Richard Seguire, a fireman who is employed as janitor in the Washington Hose & Chemical Company's headquarters, has invented an automatic chain release for use in connection with fire horse stalls. It is working most successfully in the Washington and Protection fire-houses. The apparatus can be rigged up for about \$1.50. It is adjudged by far better than anything similar now on the market, costing from \$85 upwards. The model apparatus as in use in connection with the two stalls in the Washington firehouse in Rector street consists of a circuit of rope, attached to which is an iron bolt, a weight and a metal hook, an ordinary electric door lock, batteries, a circuit of wire and a push button. The rope is rigged from the cellar to near the ceiling of the ground floor. This, Mr. Seguire says, could be shortened and the apparatus simplified by the use of a metal spring. The iron bolt attached to the rope is slipped into a hole in the door jamb and through a ring attached to one end of the chain in front of the horse. The metal hook is placed over the locking mechanism of the electric lock. By a push of the button or a tap on the regular fire alarm, if the apparatus is connected with that, the lock holder will be released, the hook will drop, releasing weights or a spring, and the bolt is jerked out of place, causing the chain to drop. At the same time a big gong over the stall is sounded, quickening the pace of the horses. All this happens in the instant the button is pushed or the first tap of the alarm is sounding.

Mr. Seguire has his model apparatus so rigged that he can release the horses of Washington firehouse while in the firehouse or while in his home across the street. During the past several fires, which occurred while he was in his home, his wife pushed the release button in the residence while he ran across to the firehouse. When he arrived there the horses were standing under the harness in readiness to be hitched. Mr. Seguire is also the inventor of an automatic chain release for front doors of firehouses and for a fire horse "frisker," which are being used with much success in this city. The former consists of a rope and pin and with weights or a spring attached. As the apparatus is leaving the house the guard chain is automatically released and is jerked to one side, in about the same manner as firehouse doors are released. The firehouse doors are open about half of the year and a chain usually guards the entrance. This had to be released by a snap hook, and that was found to be extremely dangerous and required another man besides the driver. Men have been hurt and horses have been frightened in starting out before such a chain could be unhooked. With the new invention in use at the Washington and Lincoln quarters, all danger is eliminated and the release is automatic and instantaneous. The "frisker" is especially valuable in breaking in green horses for fire duty and is also valuable for quickening the pace of any horse in time of an alarm. It consists of an automatic operating whip which lashes the horses by means of springs at the instant the button is pushed which releases them. For the past few years makers of firehouse apparatus throughout the country have been trying to devise a simple yet effective means of releasing firehorses from stalls when doors were not used. Local firemen and other city officials studied the problem for several months. Seguire thought and planned on paper and in his mind, with the result that he has made just the apparatus which is needed. He declares it to be a boon to horses, inasmuch as it makes it unnecessary to keep doors closed in front of them. He considers it much better than the electric release used in the New York City fire department, by means of which horses must stand tied for twenty-four hours, except when at work. It is better by far than a patented and intricate arrangement which the city purchased for almost \$100, which had to be discarded after two weeks of use. Mr. Seguire is considering a plan to manufacture and sell his automatic releases.

#### Alarm Invented by Superintendent of Fire Alarm.

Morristown, N. J.—A new fire alarm signal, invented by City Electrician Pierson, proved itself to be satisfactory when the general alarm was sounded for a fire recently. Alderman R. R. Reed, of the Fire Committee, expects to install the new apparatus. The new signal is termed as a neighborhood electric whistle for fire alarm purposes. It sounds the box numbers as does the tower bell. A peculiar note to the whistle, which resembles in looks a megaphone, makes the sound distinguishable from any other signal. From the apparatus which regulates the blows are four of the whistles pointing in different directions. Similar apparatus are intended to be placed in different parts of town. They are called neighborhood whistles because the sound is not supposed to carry over 250 feet in the four directions. A trial has been given the new invention for a number of weeks, it sounding with the curfew each night. The machine was not claimed to be perfect until a general alarm came in, when it whistled number 28 perfectly. An apparatus with three whistles will be placed on the First Ward hose house on Morris street for a further test. One will point down Morris, one up Morris, and the other toward Elm street. This signal differs altogether from the other whistles which blow the numbers inasmuch as former automatic alarms are run by steam or air power. The new one is worked alone by electricity as are the fire bells. Experts have been endeavoring for the past few years to perfect such an electric whistle, and as the apparatus was contrived by Morristown's Superintendent of Fire Alarm this is the first place where such an alarm has been tried and found successful.



## MOTOR VEHICLES

### Firemen Turn to Motorcycles.

Paulsboro, N. J.—For some time the two fire companies in town have been discussing the plan of purchasing an automobile fire engine, but their views were changed when a motorcycle was pressed into service for towing a hose carriage. It now is probable that motorcycles will be purchased to haul the fire apparatus.

### Purchase Automobile For County Engineer.

Marshalltown, Iowa.—The supervisors have invested \$1,000 of county money in an automobile. Needing some rapid means of conveyance for Engineer Ash to get about for the county road and bridge work, the supervisors bought a moderate priced five-passenger car. The new road law, and the engineer being inspector of bridge construction work in addition to superintending bridges to be built by the county, will necessitate him being on the road a great deal of the time. The supervisors figured that the only way the engineer could get about speedily was to buy an automobile.

### Chief's Annual Report and Recommendations.

Butte, Mont.—Fire Chief Peter Sanger has filed his annual report, ending April 30. The total loss by fire in the city during the past 12 months was \$389,863.90. Mr. Sanger is more than pleased with the motor apparatus and says: "The apparatus of the department at the present time is in better condition than it was at the time of my last report, having added two automobile combination hose and chemical wagons, one of them being used as a flying squadron, and our appropriation for the fire department for the last year was \$70,000. Our expenses include the purchase of two automobiles for \$11,584. I am more than pleased that some of my former recommendations have been considered, meaning the two auto hose and chemical wagons, one of them being used as a flying squadron, which are in service now; also the ordering of a motor quick-raising aerial truck which is to be delivered by the first of June. I am very sorry that your honorable body did not see fit to order the triple combination pumping engine and I renew my recommendation for the same. I also renew my recommendation for an automobile for the chief, not a pleasure car, but a service car. I would also recommend that I be allowed to hire an automobile machinist, for when our aerial truck gets here and with our two machines in service now it is almost impossible to get along without one, for our streets in Butte, not being paved, makes it very hard on heavy machines like ours. I also renew my former recommendation that the city attorney's office be instructed to draw up an ordinance regulating the storage of gasoline. I would also recommend the purchase of at least one dozen tarpaulins for salvage work and the purchase of 1,000 feet of hose. If we get 1,000 feet every year we can keep our supply of hose nicely.

### Hose Company vs. Selectmen.

Hudson, N. H.—The Hudson Hose Company has brought suit against the Selectmen of the town of Hudson to compel them to carry out a vote of the town and purchase a motor truck. There are thirty names of members of the hose company signed to the petition, and the defendant Selectmen are Henry C. Brown, Frank A. Connell and John A. Robinson. The history of the case as shown in the writ is that at the town meeting held on March 12, 1912, the town had an article in the warrant as follows: "Article 13. To see what sum of money the town will vote to raise to aid the Hudson Hose Company in the purchase of a motor truck, or take any other action that may be deemed necessary to provide better fire equipment for the town and raise money therefor." When the article was acted on at the town meeting the voters authorized:

"That whatever sum of money the Hudson Hose Co. may raise by subscription or otherwise on or before Sept. 12, 1912, that the town will pay equal amount for the purchase of a motor truck and other fire equipment, providing said sum does not exceed \$1,000." The hose company say that they succeeded in raising the required amount, several prominent citizens contributing liberally, so that they had the \$1,000. They so informed the Selectmen, and on March 27, of this year, the officers of the hose company demanded the money of the Selectmen. As the Selectmen refused to turn over the money, the company has brought suit of mandamus. The petition for the writ of mandamus was filed on April 19 through the attorney for the company, Judge George W. Clyde. The Selectmen in their reply oppose the writ, denying that it is their duty as: "1. They are under no personal obligations to the said plaintiffs in the premises. 2. That if said plaintiffs are entitled to any relief, they have a plain, adequate and complete remedy at law."

### Auto Patrol Arrives.

Utica, N. Y.—Utica's new automobile combination patrol and ambulance has arrived from Philadelphia. The car will carry 17 men as a patrol and as an ambulance will care for at least three patients besides the driver and doorman. The car is painted a dark green, the running gear being a dull red. The chassis was especially built for the machine, which is driven by a six-cylinder Winton engine. The car is electrically lighted and equipped with the most modern appliances. It is expected that the machine will be placed in service about the middle of next week.

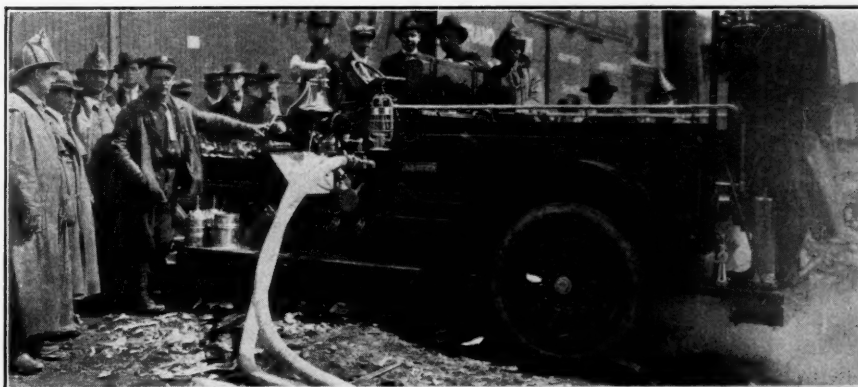
### Kissel Kar Auto Truck for City Tested.

Dallas, Tex.—Tests of the big auto truck to be at the disposal of the city for thirty days in the work of the trash collecting department were made by Commissioner Scott and Chief Sanitary Inspector L. D. Busbee, who rode about in the truck driven by George Smithson, demonstrator for the Kissel Kar Company. There was a trial of the collapsible bed, six feet wide, six feet high and ten feet long; of the ladders to use when it is in full position; of the big engine with separate rear-wheel drives, and even the tail lights, for this piece of city apparatus is to have the rear illumination.

### New Fire Truck Soon to be Delivered.

Beloit, Wis.—Beloit's new auto fire truck, which was ordered several months ago by the Council is to be shipped from Elmira, N. Y., within a week. The new truck was manufactured to order by the American-La France Co., which built the first truck which is now in use. It is slightly larger than the present machine and has nickel plated trimmings instead of brass, which are used on the machine at the central station. This will make it easier to keep it in first class condition as the nickel shows dirt less than the brass.

The new truck will be stationed at the central station,



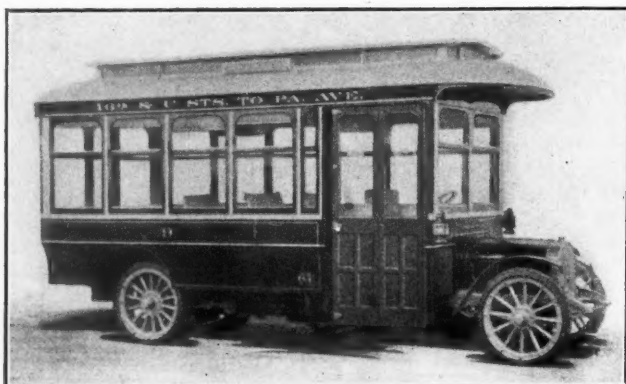
Courtesy Dallas Morning News.

AUTOMOBILE FIRE ENGINE RECENTLY PURCHASED BY CITY OF DALLAS, TEX.

while the present one will be sent to No. 2. This will allow of the disposal of another team. It is hoped that all the apparatus may be motorized as rapidly as practicable.

#### Transportation by Motorbus Proves Popular.

Washington, D. C.—Washington, with its wide, well-paved streets, is probably as well adapted to motorbus operation as any city in the world, and this fact has undoubtedly contributed to the popularity of this form of transportation in that city. However, similar bus lines in other cities and in interurban service, where paving conditions were far from satisfactory, have proved successful and have shown that the construction possesses ample stability to withstand severe racking. The Metropolitan Coach Company has been operating a fleet of six buses, very much like the one in the accompanying illustration for about three and a half years. The six new buses run



WASHINGTON'S PREPAYMENT PLAN MOTOR BUS.

along 15th and 16th streets between U street and Pennsylvania Avenue, a distance of 1½ miles. Transfers to the railways are issued at 15th and H streets, near the White House. Due to the large number of Federal employees who use the line, two rush-periods have developed—one from 7.30 a. m., with the peak at about 8.30, and the other from 4 to 6.30 p. m., with the peak at about 5 o'clock. The route lies entirely in a high-class residential district, and residents of that section, as well as the many tourists who visit Washington at all seasons, make up about 50 per cent. of the traffic.

The bottom frames of the new busses built by the J. G. Brill Company are bolted to a two-ton Mack chassis. The bus is arranged for prepayment operation and has a two-leaf outward-folding entrance and exit door, under control of the chauffeur, at the forward right corner; in the rear is an emergency exit door, also under his control.

#### Tractor Will Pull Fire Apparatus.

Wilmington, Del.—Having had a committee at work for the past month inspecting automobile tractors on fire engines in New York and Philadelphia, members of the Wecacoe Fire Company have decided to obtain such an apparatus for use on their modern steam engine. The committee elected, consisting of Dennis S. Shields, Thomas F. Kenney and William J. Bailey, was given full power to act and it is expected a contract will be given in a short time for a tractor. The committee has inspected the Christy Tractor in several cities and at present they are considering an electric driven one. Just what kind will be selected is not known as several favored the Christy Tractor, which is gasoline driven. At any rate the company is to have such an apparatus and those inspected by the committee were capable of making thirty miles an hour on level ground.

#### Motor Truck Feeds Oil to Mosquitoes.

Portland, Ore.—Over 200 gallons of crude oil have been emptied into the various ponds in Central East Portland by City Health Officer Wheeler as a starter in his crusade of mosquito extermination. Early in the morning he loaded a big motor truck with oil and with Deputy Health Officer Beeman started on his round of the various ponds. He first poured a liberal supply into the ponds in Sulli-

van's Gulch and next he went to the Hawthorne sloughs, where he covered the surface of the ponds with the liquid. The ponds on East Second between East Oak and East Stark streets, those near the Inman-Poulsen mill and the lake in Laurelhurst Park were next given attention. The oiling of ponds will be continued until all of them have been given a liberal coating. The big pond near the Oaks is being oiled by the Portland Railway, Light & Power Company. When the oil is poured into a pond it spreads in a thin film over the entire water area and immediately kills all mosquitoes and their eggs which come in contact with it. It is the intention of Dr. Wheeler to renew the oil on the ponds later in the Spring.

#### Fire Truck in Smashup.

Youngstown, O.—Joseph Beynon, driver of the Knox motor ladder truck at No. 8 station, Market street, came near losing his life when the steering knuckle of the truck broke and the apparatus crashed into the east railing of the Market street bridge. Beynon was thrown sideways from his seat and his arm and hip were badly bruised when he struck the sidewalk. Had he been thrown more to the front it is likely that he would have been tossed clear of the railing on the bridge onto the Pennsylvania railroad tracks 80 feet below. The ladder truck was traveling at a high rate of speed north on the bridge. It had crossed about half way and was running in the street car tracks when the accident happened. It is said that the attempt to turn out of the car tracks to avoid striking a street car caused the steering knuckle to break. The railing of the bridge, which was the only obstacle in the path of the truck, was badly battered and thrown out of line, being torn from the concrete foundation for a considerable distance, indicating the force of the impact. The truck is one of the heaviest in the service, being operated by a three wheel tractor. The front of the machine was badly damaged. When Safety Director Parrock and Chief Wallace were asked for an explanation of the accident they declined to discuss it.

## GOVERNMENT AND FINANCE

#### Commission Form Won in Portland.

Portland, Ore.—The vote cast at the special charter election shows that the commission form of government has been adopted in Portland. The enactment of the new charter automatically abolished the primary nominations for all officers, the course prescribed being a non-partisan preferential election.

#### Municipal Ownership.

Wilson, N. C.—The City Clerk states that for the month of April the receipts of the Wilson Power and Light plant exceeded the receipts for the same month in 1912 by \$478.30. The total receipts during the past three months in the water department was \$2,863.17 or an increase over the same period in 1912 of \$369.85. The expense of operation being practically the same, the increase is additional profit. Municipal ownership is a good thing for Wilson.

#### Municipal Saloons.

Genoa, Ill.—Genoa took a step toward the municipal saloon when the village board ordered the purchase of four locks to be placed upon the doors of the four dramshops in town. The resolution instructed the night watchman hereafter to lock the doors of the saloons at the close of business and unlock them in the morning. The only keys to the locks shall be the property of the village, and must be returned to the town hall every morning, the order says.

#### Columbus Votes for Commission Government.

Columbus, O.—By a vote of 7,299 to 2,845, Columbus has voted to change its form of government and elected fifteen Charter Commissioners to draft a new charter. Only about one-fourth of the qualified electors voted. With one exception the Charter Commissioners were indorsed by the Municipal Charter League, which is pledged to nonpartisan elections, short ballots and centralized responsibility. The



local Democratic administration and organization fought the charter proposal. Commissioners elected were: M. A. Gemunder, G. W. Gillette, Fred Green, Emmet Hysell, Felix Jacobs, Rabbi S. Kornfeld, L. D. Lampman, Thomas Leonard, C. A. McCreary, Fred W. Postle, L. B. Tussing, Prosecutor E. C. Turner, C. W. Wallace, E. L. Weinland and Albert Zetter.

## STREET CLEANING AND REFUSE DISPOSAL.

### Women Would Superintend Dust Laying.

Burlington, N. J.—Burlington women have asked city authorities to put the municipal street sprinklers in their charge and have offered to superintend the summer fight against dust.

### County to Oil 50 Miles of Roads to Lay Dust.

Atlanta, Ga.—The question of oiling the roads of Fulton county for the summer months was brought to the attention of the roads committee of the county board at its regular weekly meeting with the result that fifty miles of roadway in the county were ordered oiled with petroleum asphalt in order to lay the dust. The work will be done under the supervision of Sam E. Finley, who has a four-year contract with the county.

### Water Will Lay Dust This Season.

Quakertown, Pa.—Quakertown Council is wrestling with the dust problem. Last summer \$1,400 was expended for oiling the streets, but water will be used this season and several additional blocks will be paved.

### Gathered Up 37,000 Cans.

Winchester, Ind.—The city and practically every citizen is being benefited by the tin can crusade started by the sixth and seventh grades at the Frances Willard school. Already a total of 37,000 cans have been gathered and the contest will last two days longer.

### Clean-Up Day a Success.

Spokane, Wash.—From the records of the city it has been learned that 3,650 wagon loads of refuse were removed from back yards and alleys of Spokane in the "Spokane-Spic-and-Span" campaign led by the Ad Club and participated in by the public generally. With the city beautiful committee of the Ad Club showing the way, business men, school children and city officials united to make the campaign successful. Every block in the residence sections had its corps of schoolboy workers, each under direction of a captain. The boys were not backward about suggesting to householders in their district the necessity of cleaning up their premises. They then contracted to haul away the refuse, employing teams, wheelbarrows and express wagons drawn by boy power. Dr. J. B. Anderson, city health officer, says it was the most successful clean-up campaign ever conducted in Spokane, and that it undoubtedly will reduce the number of flies by several million.

## RAPID TRANSIT

### Plans to Wage a War on Packed Cars.

Chicago, Ill.—Suits against both the elevated and surface roads in Chicago for overcrowding cars will be filed on behalf of the city at once, Assistant Corporation Counsel Beckwith announced, following passage of an ordinance by the city council last aimed at "strap hanging." By unanimous vote the council passed an ordinance providing that the number of seats in any car on the surface, elevated or steam roads in the city shall be considered the full capacity of the car. Several other equally drastic measures, the purpose of which was to improve transportation facilities, were passed, as steps in the city's fight against the elevated and surface companies. The commissioner of public works was ordered to remove all news and cigar stands and other obstructions from elevated stations unless the

elevated companies themselves act within thirty days. At a conference with the transportation committee, representatives of the elevated companies agreed to grant universal transfers.

### Ocean City Metropolitan.

Ocean City, N. J.—This aggressive and modern seashore town, that but a few brief summers since was but a strip of sand dunes along a monotonous waste of waters, is taking on a metropolitan air. The principal street has been paved with wooden blocks and the dust that is the bane of many coast towns is a thing of the past. The town is well lighted, well policed and well governed, modern ideas are to the fore and commission government has taken root here, with the result that Ocean City is making wonderful strides.

### Labor for City Ice Plant.

New York, N. Y.—A committee from the Central Federated Union, which embraces all branches of organized labor in New York, New Jersey, and Connecticut, will appear before Gov. Sulzer to advocate the construction of a municipal ice plant in New York. The three men on the committee are Ernest Bohn, Secretary of the Central Federated Union; Edward P. Hannah and James P. Holland.

"We have the support of 500,000 workmen in this movement," said Mr. Bohn. "The members of the Central Federated Union are unanimous in favor of the manufacture by the city of its own ice. Ice is now \$6 a ton in this city. Manufactured ice costs only 8 cents for 100 pounds in the Panama Canal zone, where it is manufactured. Workingmen and their families suffer most from the heat so it is fitting that they should take the lead in the movement for a municipal ice plant. The sentiment of organized labor is so strong on the subject that I am sure the Governor will not be able to withstand our arguments in favor of calling a special session of the Legislature to take action on the question."

### Municipal Dance Halls Now Open.

Cleveland, O.—Municipal dance halls established in all the biggest public parks are open now for the summer season. Mayor Baker, who led the grand march which inaugurated three-cent dances in Cleveland last summer acted in a similar capacity on the opening night. Chaperones have been appointed from among Cleveland's most exclusive social circles, and girls unaccompanied by parents or guardians or escorts after 9 o'clock, will have to go home.

### City Will Plant 4,000 More Trees.

Duluth, Minn.—The city will plant 4,000 trees along the streets and in the parks of the city this year, according to Henry Cleveland, Superintendent of Parks. Of these 300 will be butternuts, which experiments have shown will do well in this climate. They will be scattered in clumps in the parks. When they begin to bear, which they will do in a couple of years, they will be as big a hit with the kids as they will with the squirrels and chipmunks. Most of the other trees will be maples and elms, which are well adapted to this part of the country. About 1,000 trees have already been planted and the others are being put in the ground as rapidly as possible.

### Santa Cruz Opens Municipal Exhibit.

Santa Cruz, Calif.—Under the auspices of the civic department of the Saturday Afternoon Club a municipal exhibit that continued for nearly a week, was opened at the Armory. It is perhaps the first exhibit of this character ever attempted on the Pacific Coast. Mayor George W. Stone presided at the opening of the exhibit, when a literary programme was given. Every society, church, school and institution in the city had an exhibit to show the work engaged in. The city department had novel exhibits to acquaint the people with facts and data on how a municipality is conducted. Industries had a portion of space. The whole show was to educate the people and teach them in matters tending to promote interest in civic and public affairs. Each day a specially arranged programme was carried out with lectures on up-to-date themes.

## LEGAL NEWS

### A Summary and Notes of Recent Decisions— Rulings of Interest to Municipalities

#### Contracts—Attorney's Fees.

*Oglesby v. City of Fort Smith.*—An attorney employed by a city may, by agreeing to accept the same fee as the one to be paid by the adverse party to his attorney, legally bind himself, though the city would not be bound except for a reasonable fee, on the ground that no one was authorized to enter into the contract.—Supreme Court of Arkansas, 152 S. W. R., 145.

#### Action to Enjoin Encroachment—Presumptions.

*Parsons v. Village of Rye et al.*—Where legislative acts relating to the laying out of a highway indicated the general purpose that it should be 66 feet in width, yet left it to the discretion of commissioners to make the width less through any meadow, grove, or cornfield, it cannot be presumed, in the absence of records, that it was laid out in any particular part to that width.—New York Supreme Court.

#### Occupation Tax.—Injunction.

*Turner et al. v. City of Ardmore et al.*—Plaintiffs obtained an order restraining the city of Ardmore from prosecuting them for refusing to pay an occupation tax assessed against them by such city. Held, such order was erroneous for the reason that plaintiffs had an adequate remedy under the statutes by appeal from the judgment of the municipal courts.—Supreme Court of Oklahoma, 130 P. R., 1156.

#### Municipal Franchise.—Railway Tracks.

*Grand Trunk Western Railway Company, Plff. in Err., v. City of South Bend et al.*—The obligations of a contract created by a valid municipal ordinance granting to a railway company the right to lay double tracks in one of the city streets are unconstitutionally impaired by the subsequent repeal of so much of the ordinance as relates to that part of the street upon which a single track only has actually been built, where the franchise granted by such ordinance was single and specific, and was accepted by the company in its entirety, and the company, in reliance thereon, acquired land from the abutting owners with a view to laying a double track as the increase in business demanded, and has actually built the double track for a part of the distance.—United States Supreme Court, 33 S. C. R., 303.

#### Contracts.—Leasing Steam Rollers.

*People ex rel. Buffalo Steam Roller Co. v. Laidlaw et al., Town Board.*—The only way that a steam roller can be leased to a town is under Highway Law which requires that the rental rate shall be fixed and approved by the town board, and where a steam roller has been contracted for and used a year, but the town board has refused to fix or approve the rental, no recovery can be had on quantum meruit or otherwise.—New York Supreme Court, 140 N. Y. S., 641.

#### Railroads—Regulation of Construction—Ordinances.

*City of Versailles v. Kentucky Highland R. Co.*—Ky. St. confers upon the council of a city of the fourth class power to make all regulations necessary to secure the general health, to define and remove nuisances, to grant railroad rights of way over its public streets on proper conditions as to speed, signals, gates, etc., and a subsection 33 gives it legislative power as to all things properly belonging to the police powers of incorporated cities. An ordinance of defendant city provided that all railroads within its limits should cover any cuts 20 feet or more in depth, and, if within 500 feet of any dwelling, etc., with solid, substantial arches, sufficient to prevent the emission of smoke, sparks, etc., and that at the approaches to such arches the side of

any open cut, if 10 feet or more in height, should be securely walled for a height of at least 3 feet above the track, and that other open cuts exceeding 5 feet in depth should be securely fenced, on penalty of a fine. Held, that as the ordinance would in no way conserve the public health, morals, or safety, but aimed to control the manner of the construction of plaintiff's railroad on its own property, at an admitted cost of \$47,000, it was unreasonable, arbitrary, and oppressive, and hence not a valid exercise of the police power.—Court of Appeals of Kentucky, 154 S. W. R. 388.

#### Streets—Change of Grade—Damages.

*Fornof vs. Borough of Wilkesburg.*—Where, in an action for damages from the change of a street grade, the evidence was conflicting as to whether the curb set was at a grade different from that established by ordinance, it was not error to instruct the jury that they might consider the actual grade at which the curb was set if they found it different from that established by ordinance.—Supreme Court of Pennsylvania, 86 A. R. 494.

#### Bonds—Statutes—Necessary Expenses.

*Robinson et al v. City of Goldsboro.*—A statute authorizing the board of aldermen of the city of Goldsboro to issue interest-bearing bonds at a rate not exceeding 6 per cent. per annum to provide for floating debts theretofore contracted for necessary expenses and for enlarging the sewer system, for waterworks improvements, for equipping the fire department, and for paving streets is unaffected by Pub. Laws 1911, giving cities power to issue bonds for purposes specified, when approved by a majority of the qualified voters or by the city charter, conferring on the board of aldermen the power to provide water and to provide for repairing and draining streets, etc.; the bonds in question being all issued for necessary expenses.—Supreme Court of North Carolina, 77 S. E. R., 948.

#### Defects in Streets—Stairways.

*McIntyre v. City of Pittsburgh.*—In an action against a city for injuries sustained while descending a flight of stairs on the side of a hill from negligence in the construction of steps too steep and narrow in the tread for safety, the jury should not be permitted to say that the discretion of the city authorities was not properly exercised as to the plan for construction of the steps, where it is not shown that the method of construction was unusual or different from the ordinary plan in such localities, and there is no evidence as to the conditions on the ground nor as to the requirements for the public service at that place.—Supreme Court of Pennsylvania, 86 A. R., 300.

#### Unguarded Sidewalk—Negligence—Notice.

*Benton et ux. v. City of St. Louis.*—Where a city negligently permitted a sink hole close to an unguarded and insecure sidewalk, it was chargeable with notice that the sink hole was filled with water after a storm, at which time a child was drowned in it, though it did not know that that particular storm had filled the hole with the water.—Supreme Court of Missouri, 154 S. W. R. 473.

#### Officers—Salaries—Acceptance of Part.

*Golding v. City of New York.*—The acceptance by a city officer of a salary less than that fixed by law is not a waiver of the statutory salary at a higher rate, though he signed the pay rolls reciting that the moneys received were in full payment.—Municipal Court of City of New York, 140 N. Y. S., 1020.

#### Compensation of Tax Collector—Percentage.

*City of Pittsburgh vs. Gernet et al. Same vs. Fulton et al. Same vs. Goshorn et al.*—A city ordinance, fixing the compensation of the collector of delinquent taxes on a percentage basis, was authorized under act of June 20, 1901, and act of May 8, 1909, providing that such officer shall receive such compensation, either salary or fees, as may be fixed by the council.—Supreme Court of Pennsylvania, 86 A. R. 462.



## NEWS OF THE SOCIETIES

### Calendar of Meetings.

June 2-6.  
NATIONAL ELECTRIC LIGHT ASSOCIATION.—Annual Convention, Chicago, Ill. T. C. Martin, Secretary, 29 West 39th street, New York City.

June 5-7.  
CONFERENCE OF MAYORS OF NEW YORK STATE.—Meeting, Binghamton, N. Y. William P. Capes, Secretary, 105 East 22d Street, New York City.

June 9-13.  
INTERNATIONAL ASSOCIATION OF CHIEFS OF POLICE.—Twentieth Annual Convention, Raleigh Hotel, Washington, D. C. Major Richard Sylvester, Superintendent of Police, Washington, D. C., President.

June 10-11.  
MINNESOTA STATE FIREMEN'S ASSOCIATION.—Annual Convention, Thief River Falls, Minn.

June 10-12.  
NORTH DAKOTA FIREMEN'S ASSOCIATION.—Annual Convention, Bismarck. H. L. Reade, secretary, Bismarck, N. D.

June 11-13.  
MARYLAND STATE VOLUNTEER FIREMEN'S ASSOCIATION.—Twenty-first Annual Convention, Westport.

June 23-28.  
INTERNATIONAL ROADS CONGRESS.—Third Congress, London, England. W. Rees, Jeffreys Secretary, Queen Anne's Chambers, Broadway, Westminster, London, S. W.

June 23-27.  
AMERICAN WATER WORKS ASSOCIATION. Thirty-third Annual Meeting, Minneapolis, Minn. John M. Diven, Secretary, 47 State street, Troy, N. Y.

June 24-26.  
UNION OF TEXAS CHIEFS OF POLICE AND CITY MARSHALLS.—Annual Convention Galveston, Tex.—Hollis Baum, Chief of Police, Waco, President.

June 24-26.  
SOUTH CAROLINA STATE FIREMEN'S ASSOCIATION.—Annual Convention, Abbeville. Chief Elgin, Abbeville, S. C.

June 24-28.  
AMERICAN SOCIETY FOR TESTING MATERIALS.—Annual Convention, Atlantic City, N. J. Edgar Marburg, Secretary, University of Pennsylvania, Philadelphia, Pa.

June 27-29.  
LOUISIANA STATE FIREMEN'S ASSOCIATION.—Eighth Annual Convention, Opelousas.

July 8-10.  
INDIANA LEAGUE OF MUNICIPALITIES.—Annual Convention, Gary. A. P. Melton, Secretary, Gary.

July 15-17.  
UNION OF CANADIAN MUNICIPALITIES.—Thirteenth Annual Convention, Saskatoon, Sask. W. D. Lighthall, Hon. Secretary-Treasurer, 305 Quebec Bank Bldg., Montreal, Canada.

July 21-26.  
IOWA STATE FIREMEN'S ASSOCIATION.—Annual Convention, Perry.

July 22-25.  
LEAGUE OF WISCONSIN MUNICIPALITIES. Annual Convention, Neenah, Wis.

August 5-8.  
NEW YORK STATE FIREMEN'S ASSOCIATION.—Annual Convention, Brockton.

August 19-22.  
INTERNATIONAL ASSOCIATION OF MUNICIPAL ELECTRICIANS. — Eighteenth Annual Convention, Watertown, N. Y.

August 25-30.  
FOURTH INTERNATIONAL CONGRESS ON SCHOOL HYGIENE, Buffalo, N. Y. Dr. Thomas A. Storry, Secretary General, College of the City of New York.

August 26-28.  
CENTRAL STATES WATER WORKS ASSOCIATION.—Seventeenth Annual Meeting, Cedar Point, O.—R. P. Bricker, Secretary, Shelby, O.

September 1-6.  
INTERNATIONAL ASSOCIATION OF FIRE ENGINEERS. Forty-first Annual Convention, Grand Central Palace, New York City. James McFall, Secretary, Roanoke, Va.

September 9-13.  
AMERICAN PUBLIC HEALTH ASSOCIATION.—Annual Convention, Colorado Springs, Col.—S. M. Gunn, secretary, 735 Boylston street, Boston, Mass.

October 7-10.  
AMERICAN SOCIETY OF MUNICIPAL IMPROVEMENTS.—Twentieth Annual Meeting, Wilmington, Del.—A. Prescott Folwell, Secretary, 50 Union Square, New York City.

### Southwestern Water Works Association.

Delegates from nine states attended the second annual convention of the association, at Fort Worth, Tex., May 12. The visitors were welcomed by Mayor Milam, and the response was made by R. W. Finley of Austin. T. J. Powell, former Water Commissioner of Fort Worth, read a paper on "The Artesian Water Bearing Sands of Texas." He said that the supply of water in these sands was one of the greatest assets of the state. Tunnels connecting wells stretching cross-wise of the strata and extending away from the plants at proper depth could always be extended to meet the growing demand of any Texas city located over the sands. Secretary Fulkerson read a report, showing the membership had increased since its organization. Among the papers presented were the following. "Lignite and Peat as a Future Fuel," by Charles Ade; "The Value of Pure Water," by R. E. McDonnell; "Fort Worth's New Water Supply," by J. D. Tramwell; "Setting Water Meters," by H. M. Lofton, Chattanooga, Tenn.

One of the most important features of the meeting was a visit to the West Fork reservoir, where 30,000,000,000 gallons of water will be stored.

The next annual meeting will be held in Tulsa. The election of officers resulted as follows: Pat Brachen, Temple, Tex., re-elected president; E. L. Fulkerson, re-elected secretary-treasurer; E. L. McDuffie, Sherman, first vice-president; B. F. Cherry, Weatherford, Tex., second vice-president; E. C. Bartholomew, Austin, Tex., third vice-president; Ralph Beaton, Corsicana, Tex., fourth vice-president; L. L. Ballard, Tulsa, Okla., fifth vice-president; L. H. Gray, Lufkin, sixth vice-president.

A resolution was passed urging officers of privately-owned plants to join the association.

### Federation of Trade Press Associations

President H. M. Swetland of the Federation of Trade Press Associations in the United States has announced that the eighth annual convention will be held at the Hotel Astor, New York, September 18 to 20, 1913. The Federation includes the New York Trade Press Association, the New England Trade Press Association, the Chicago Trade Press Association, the St. Louis-Southwestern Trade Press Association, the Philadelphia Trade Press Association and a number of unaffiliated publications, the total membership being 236, representing over 75 different trades, industries and professions.

Invitations are being extended to manufacturers, sales managers, advertising men, trade paper publishers, and all others interested in the idea of business promotion through trade press efficiency, which is to be featured at the convention.

### Illinois Highway Association.

The State Highway Association, at its annual session at Springfield, Ill., May 13, gave the Tice good roads bill an indorsement, and by resolution reaffirmed its former declarations for the betterment of Illinois "system of wretched public highways." A volunteer committee will remain in Springfield until an opportunity has been afforded it to present to the legislature the association's stand with regard to the Tice bill and good roads legislation in general.

Officers of the association for the coming year were elected as follows: William G. Edens, Chicago, president; S. E. Brandt, DeKalb; C. A. Kiler, Champaign; C. G. Miller, Cairo; Harvey G. Riggs, Quincy; George Woodruff, Joliet, and John B. Lee, Harrisburg, vice-presidents; Thomas Sudduth, Springfield, treasurer; Richard J. Finigan, Chicago, secretary. An advisory board of twenty-five members was also elected.

Delegations, among them one from Chicago, that appeared before the association to urge an indorsement by it of legislation for good roads projects of a purely local character found their mission unavailing. The association refused to support any proposed legislation that is not in keeping with the state aid for state highways plan. A resolution asking the legislature to appropriate \$600,000 for state aid in road building during the next two years was presented, but after much debate was withdrawn, the association deciding to lend its undivided attention to the furtherance of the Tice bill.

### New Mexico Good Roads Association.

At the convention at Albuquerque, N. M., May 10, the following officers were elected: President, R. E. Twitcheil, East Las Vegas; general vice-president, Francis E. Lester, Las Cruces; secretary, E. L. Grose, Albuquerque; treasurer, John Becker, Jr., Belen; executive committee—Don J. Rankin, D. K. B. Sellers, A. B. Stroup, Albuquerque; auditing committee—J. W. Corbett, Mountainair; W. M. Atkinson, Roswell; Lee F. Elliott, Las Cruces. County vice-presidents: Curry—E. R. Hart, vice-president; T. M. Mabry, organizer; Eddy—R. M. Thorne, vice-president; Mr. Buey, organizer; Guadalupe—Benigno Padilla, vice-president; John Hicks, organizer; Grant—John L. Burnside, vice-president; D. B. Ormsby, organizer; Dona Ana—John C. McNary, vice-president; P. H. Bailey, organizer; Lincoln—W. M. Ferguson, vice-president; Dr. Laws, organizer; Luna—Dr. R. C. Hoffman, vice-president; J. L. Brown, organizer; Quay—J. W. Corn, vice-president; W. B. Rector, organizer; Sierra—H. A. Wolford, vice-president; Neil Sullivan, organizer; Socorro—Dr. C. G. Duncan, vice-president; W. R. Morley, organizer.

Resolutions were adopted by the convention recommending, among other things, the early completion of the scenic highway through the Pecos national forest, between Las Vegas

and Santa Fe, the signing of all state highways, the payment of a salary to a secretary, the issuing of a state road book similar to the one recently published in Arizona by Harry Locke, the early completion of the Camino Real from the northern to the southern boundary of the state, and the construction of a bridge across the Rio Puerco on the Camino Real extension, and complete revision of the state road laws. The resolutions were presented and read by Francis E. Lester, chairman of the committee on resolutions, and were adopted by unanimous consent.

If anyone heretofore has had misgivings as to Governor McDonald's policy relative to the good roads movement, he had these removed, for in his speech before the convention the Governor declared he was doing all in his power to aid in the construction of good roads in the state. He spoke for thirty minutes or more and made a plea for harmony among county officials and declared that he believed enough men could be found with the interest of their communities and the state at heart who would supervise road building without pay. He praised State Engineer J. A. French, and served notice on those who thought they had grievances against the engineer that they could get no satisfaction out of him by filing complaints against that official, for he would stand back of Mr. French in whatever he might do.

#### American Highway Association.

Following the recent publication of the Good Roads Year Book, which presents the road situation in the United States to date, the American Highway Association has begun the issuance of a series of instructive papers presenting the most important phases of road improvement from the standpoint of both the layman and the engineer.

Among the first to be issued is a reprint of the address by W. W. Finley, president of the Southern Railway, at the recent American Road Congress on "Good Roads and the Cost of Living." Mr. Finley holds that the cost of living is largely an economic question and that efforts should be turned toward increasing the area of farm land under cultivation and increasing the yield of farm products per acre. He points to the well-known fact that prospective farm settlers are largely governed by railroad and public road facilities and that when these are not adequate farm operations are discouraged.

#### Union of Canadian Municipalities.

The official circular announcing the thirteenth annual convention to be held at Saskatoon, Sask., has been issued by M. D. Lighthall, Hon. Secretary-Treasurer, 305 Quebec Bank Building, Montreal.

The Union has now a long period of faithful service to the people, and of many large and important results; and is constantly at work along the

same lines, and introducing new ideas wherever sound ones may be found. It is in fruitful communication with municipal associations all over the world, especially in the United States and Great Britain, and has been the means of establishing "The International Municipal League," of which world-wide association it is the representative in the Dominion.

The official program is now in preparation. Among the subjects that will receive special attention will be:

Putting Watered Stock into Public Utility Corporations.

Provisions for the Welfare of working Population.

Inter-provincial Highways.

Wants of Rural Municipalities.

Treatment of Garbage vs. Incineration.

Improved System of Water Filtration and Purification.

Under-representation of Cities.

Town Planning.

Experience of a General City Manager.

Improvement and Preservation of Our Great Inland Waterways.

#### Georgia Association Electrical Engineers and Water Works Superintendents.

A new organization with the above name has been formed with F. P. Harrison, Covington, acting president and J. W. Butts, Monroe, acting secretary. The objects of the association are stated to be the holding of meetings where members may discuss matters affecting their special profession. A committee will be appointed to keep a record of openings and changes at different plants in the South and to assist members in securing positions.

#### Conference on Weights and Measures.

Control and supervision by the national government of weighing and measuring devices for the purpose of stopping widespread frauds and mistakes which they agreed exist, were advocated by speakers before the eighth annual conference on weights and measures, in session at the bureau of standards, Washington, D. C., May 17. The bureau was pointed to as the proper clearing house for weights and measures.

Weights and measures men from many cities, counties and states agreed that under the present systems the consuming public is only partially protected from frauds and mistakes, and that uniform systems and standards for weighing and measuring are needed throughout the country.

In connection with the conference many strange and ingenious methods used to cheat the public were laid bare.

A paper prepared by J. L. Walsh, commissioner of weights and measures of New York City, was read by F. H. Tight. In it Mr. Walsh declared that "it can easily be realized that in the United States today there are hundreds of thousands of imperfect grades of scales, weights and measures being sold and used on the market, which should have never been permitted to be sold, much less used."

An exposition of methods of testing gas meters and a description of various ways in which the consumer of gas does not get what he pays for or the company loses gas it supplies was given by M. H. Stillman of the bureau of standards. W. F. Stutz, also of the bureau of standards, talked on the "Testing of Water Meters." R. W. Smith, deputy commissioner of weights and measures of Minnesota, spoke on needed uniformity of state laws on weights per bushel of different commodities.

Popular bulletins about weights and measures which the general public can understand were advocated by Representative Mann of Illinois at the annual banquet, at the Raleigh Hotel. He said that bulletins now issued by the public health service are unintelligible to ordinary people, and that both this service and the bureau of standards should seek to interest the general public and instruct it.

#### Municipal Engineers of the City of New York.

At the regular meeting of the Society in the Engineering Societies Building, 29 West 39th street, on May 28, Frederick W. Koop, assistant engineer Board of Estimate and Apportionment will read a paper on "Precise Leveling in New York City." The paper will be illustrated by lantern slides. Copies of the proceedings for 1912 will be distributed by Secretary George A. Taber.

## PERSONALS

Heinmiller, G. W., Carrington, N. D., has been appointed city engineer.

Hertz, S. C., Macon, Ga., has been appointed superintendent of the water and light plant at Quitman, succeeding J. M. Curtwright, resigned.

Kindrick, A. H., McAlester, Okla., has been appointed city engineer, succeeding W. P. Haliday.

Lund, A. M., Little Rock, Ark., has been appointed city engineer of New Decatur, Ala.

Odell, Samuel L., Bristol, Tenn., has been elected chief of police.

Pindell, Charles H., assistant to the president of the Warren Brothers Company, died suddenly May 13, 1913, at the age of 32 from heart trouble, following an illness of only two days. During the past several years Mr. Pindell has attended many good roads conventions in connection with exhibits of this company, and his genial presence will be missed by a host of friends.

Washington, Colonel William D., New York City, and Harold Parker, former Commissioner of Highways of Massachusetts, have been named as two of three members of an advisory committee of engineers to make a thorough investigation of highway conditions in New York state.



## MUNICIPAL APPLIANCES

### Martin Motor Chemical Engine.

The Martin Carriage Works, York, Pa., who have been builders of carriages and wagons for twenty-five years have placed on the market motor chemical engines. These engines are made in two types, A and B, the latter of less horsepower and lighter in some particulars than the former. The following are some of the details of the type A machine, which is also illustrated:

**Motor.**—Four cylinder, four cycle, verticle, water cooled, T head, enclosed valve springs. Bore  $4\frac{3}{4}$ , stroke  $5\frac{1}{2}$  inches, 50 horse power at 1,300 R. P. M.

**Ignition.**—Magneto and storage battery.

**Lubrication.**—force feed.

**Bearings on crank shaft.** Bronze, babbitt lined.

**Cooling.**—Water inlet beneath exhaust valves.

**Radiator.**—Cushion suspension.

**Clutch.**—Multiple disk, extra heavy.

**Transmission.**—Brown-Lipe, 5 tons capacity with  $1\frac{1}{2}$ -inch face gear. Three speeds.

**Brakes.**—Jack shaft service brakes,  $2\frac{1}{2}$ -inch face. Emergency brake on rear hub drums,  $2\frac{3}{4}$  inch face, 18 inch diameter.

**Rear Axle.**—Timken, rectangular,  $2\frac{1}{4}$  by  $3\frac{5}{8}$ .

**Springs.**—Front, 42 by  $2\frac{1}{2}$  inches. Rear, 50 inches by  $2\frac{3}{4}$  inches.

**Chains.**— $1\frac{1}{2}$ -inch pitch,  $\frac{7}{8}$ -inch roll, 1 inch wide.

**Frame.**—Steel channels with hickory wood insert.

**Wheels.**—Hickory, artillery hubs.

**Tires.**—Goodyear demountable, 36 by 4 inch front, 40 by  $3\frac{1}{2}$  dual rear.

**Wheelbase.**—About 145 inches.

**Tread.**—Front 58 inches, rear 63.

**Hose body.**—Capacity, 1,000 feet  $2\frac{1}{2}$ -inch double jacket fire hose.

**Chemical Tanks.**—Two 35-gallon tanks, with water connections.

**Chemical hose.**—200 feet  $\frac{3}{4}$ -inch.

**Ladders.**—One 20-foot extension; one 12-foot roof.

**Lighting system.**—Oil and electric.

**Generator.**—For charging storage battery and furnish current for lights.

**Starter.**—Self starter of standard make.

**Minor Equipment.**—The usual complete outfit.

### American Boulevard Arc.

The American Gas Machine Co., Albert Lea, Minn., make a gasoline street lamp which is extensively used both in large cities and small towns.

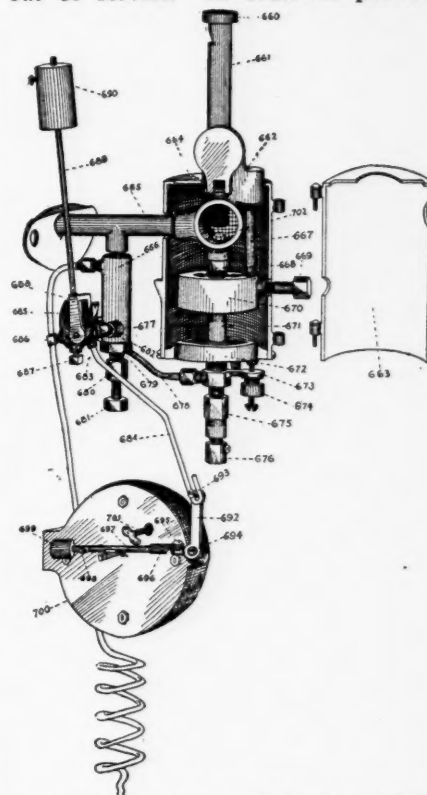
The lamp stands 11 feet 8 inches high from the base ring to the top of the enamelled hood. It is regularly equipped with three inverted mantels, producing a white light of 1,500 candlepower. It is said to be absolutely storm and wind-proof, burning steadily in the hardest gale.

The lamp is complete in itself, requiring no connections with outside tanks, wires or conduits. A five-gallon tank is built into the steel and iron base, holding the gasoline supply. An air pump puts the gasoline under a pressure of about 20 pounds, which is sufficient to feed the gasoline to the generating mechanism, also contained in the base of the lamp. The gasoline vapor mixed with 20 parts of air is delivered through the steel upright to the burners.

The generator and automatic cut-off are shown in the illustration. It is claimed to be the simplest and most effective generator ever devised for a gasoline street lamp. The sub-flame burner 670 entirely surrounds the generator tube 671, the sub-flame playing directly onto the generator tube from the inside surface of the burner, thus ensuring perfect generation under all conditions.



The automatic cut-off is actuated by gravity. The clock is encased in a strong cast-iron case, impervious to any heat it is likely to be subjected to. An important feature of the generating mechanism is the removable generator tube. By unscrewing the gasoline feed wire 678 and loosening the generator lock nut 674 the tube can be slipped out and another one inserted. In this way the generator tube and the needle seat can be cleaned at the leisure of the attendant, without putting the lamp out of service. In order to prevent

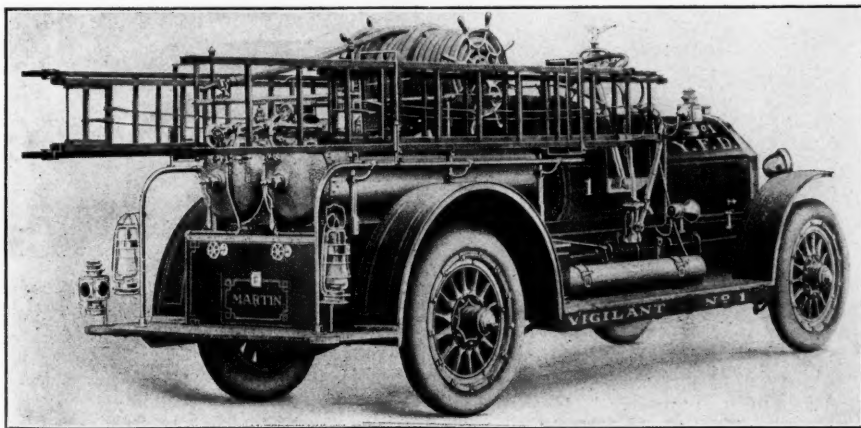


MECHANISM OF AMERICAN BOULEVARD LAMP.

breakages of the large glass globe from heat and rain, a draft of cold air is caused to flow constantly over the entire inside area of the globe. The cold air is taken in around the top of the globe through a perforated metal screen. The air then moves downward to the bottom of the globe, from which point it is drawn upward, past the burners and out through the top of the lamp.

### Gas Engine.

The Producers Supply Company, Franklin, Pa., have placed on the market a gas engine which has some novel features and an interesting history so far as its development is concerned. The company had a large experience in operating and repairing engines and finally designed the "Producers" with a view to making an engine that could be easily operated and would not require much repairs. The engine has no valves, and is self-lubricating, using the splash system of oiling. The cylinder lubricator, which is large enough to run from twelve to twenty-four hours, is the only oil cup on it. It runs equally well on gas, gasoline or any distillate lighter than kerosene.



MARTIN AUTO CHEMICAL ENGINE AND HOSE CAR.

## INDUSTRIAL NEWS

**Cast Iron Pipe.**—Chicago. A number of good municipal contracts have been let and others are pending. Quotations: 4-inch, \$28.50; 6 to 12-inch, \$26.50; 16-inch and up, \$25.50 Birmingham. Operations have not been curtailed and the smaller plants have been working on sizes that were in demand for extensions and repairs, thus avoiding excessive accumulations. Quotations: 4-inch, \$22.50; 6-inch, \$20.50. New York. Private buying shows no increase in volume. Quotations: 6-inch, car loads, \$23 to \$24.

**Lead.**—There is no decided change in the market. Quotations: New York, 4.35c.; St. Louis, 4.20c.

**Dayton Rubber Plant.**—The Dayton Rubber Manufacturing Company, makers of the Dayton Airless Tire, although submerged in 18 feet of water, was the first company in Dayton to resume shipments of goods out of the city after the flood. The week of the flood J. A. MacMillan viewed the factory from his home on the highest part of Salem avenue, through strong field glasses, and knowing what to expect, he telegraphed to New York and other eastern points and ordered several tons of rubber and other materials shipped in by express, so that, by the time the workmen got the factory cleaned up, all the new fresh materials had arrived, and the factory was ready to start up. Then the superintendent, Mr. Witsaman was sent to Akron, and secured an additional force of expert tire builders. The factory is turning out more tires to-day than before the flood, and in a few weeks a night force will be put to work. The business of the company is rapidly increasing, and Mr. MacMillan finds it necessary to work the factory overtime in order to take care of the orders.

**Granite Paving Blocks.**—Vermont's place at the head of all of the states of the Union in granite production, so far from being threatened, seems likely to be even more firmly secured. The making of paving blocks in the granite centers of the state is an industry that is showing remarkable growth, according to a writer in "Stone." According to the local newspapers, two ships' cargoes of paving blocks have recently been shipped over the Central Vermont lines from Barre to New London, Conn., to supply a market which has been created for the product in New Jersey. Figures furnished at the Central Vermont freight offices indicate that the paving block business is taking on a new lease of life in the Barre granite belt. There are other signs, too, which point to increased activity in the production of granite paving stone for purchasers out of the state. With two cargoes already unloaded at the Central Vermont docks in New London and another

cargo partially loaded and routed for the Connecticut seaport, there are many who are predicting that the present season will see the largest output of paving blocks since the granite quarries were developed. Each cargo contains over 1,000,000 pounds of granite. Freight cars loaded with the blocks are lined up on a siding until enough have been secured to insure a shipload. Then the cars are made up into a train and despatched to New London. There, freight steamers controlled by the Grand system transport the blocks to New Jersey. Thus far a large part of the output has been sold to Jersey City contractors. There are from fourteen to eighteen carloads for every ship's cargo. According to reliable information a larger number of paving cutters are employed on the "hill" than ever before. Paving cutters are working daily on both sides of Millstone hill and as wages reach a high level for this kind of work the demand for labor is quickly supplied.

**Universal Pipe.**—Members of the Administrative Board, Richmond, Va., and representatives of the manufacturers witnessed a series of tests made May 5 by Eugene E. Davis, Superintendent of the Water Department, of the "Universal" pipe purchased for use in the Laburnum tract from the Virginia Equipment and Supply Company. It was stated that the pipe stood all tests satisfactorily. The feature of the "Universal" pipe is that the sections are riveted together instead of being fitted with lead and jute. Mr. Beck, of the Administrative Board, says that the "Universal" pipe has been used by the city both in supply mains on Mayo's Bridge and for the large gas main bringing the supply from the works to the West End gas holder.

**General Electric Bulletins.**—The General Electric Company, Schenectady, N. Y., have recently issued the following bulletins: No. 4947A, Edison Mazda Lamps for Standard Electric Railway Service; No. A4097, General Electric Ventilated Railway Motors; No. A4061, Electric Arc Headlights; No. A4095, Direct Current Switchboards with Equalizer Switches on the Panels; No. A4087, Direct Current Motor Starting Panels for Heavy Service; No. A4071, Ornamental Lamp Brackets and Center Span Suspension Fixtures for Series and Multiple Incandescent Street Lighting.

**Paving Plant Leased.**—The Cranford Construction Company, New York City, has leased the asphalt paving plant of the F. E. Schneider Paving Company, Baltimore, Md. The paving plant is said to be a very fine one, and was only completed last September. A plant at the same location having been destroyed by fire.

**Aztec Asphalt.**—The United States Asphalt Refining Co., 90 West street, New York City, have issued two attractive booklets describing their products. One deals with refined asphalt and its uses and the other with liquid asphalt for oiling roads. Although Aztec asphalt has been on the market but a few years in this country it was used in the city of Mexico on important streets as early as 1900. Besides illustrations of paved streets, views showing the sources of the asphalt are presented. A number of analyses are given, comparing the physical and chemical characteristics of Aztec asphalt with other standard brands. The booklet on Liquid Asphalt illustrates roads treated with the A grade for cold application and B grade, which is applied hot. Specifications for the use of the material are added. The list of offices of the company includes such well-known asphalt men as R. D. Upham and O. E. Thurber, vice-presidents; George W. S. Whitney, secretary, and P. W. Henry, consulting engineer.

**Mastic Flooring.**—For flooring of municipal work shops of various kinds and for some parts of public buildings, the H. W. Johns-Manville Co., Madison avenue and 41st street, New York City, recommend J-M mastic. This material comes in blocks composed of a fine mineral aggregate, 80 to 200 mesh fineness, and bitumen. When these blocks are worked over into the flooring the degree of hardness may be varied to suit the place where it is to be laid. The floor is notably easier on the feet of workmen than cement. It can be laid over any flooring already in place. The standard of 1½ inch in thickness adds only 18 pounds weight to the square foot.

**City Planning.**—In order to reach the meeting of the National Conference on City Planning at Chicago, May 5-7, and secure the benefit of suggestion from those actively interested in City Planning, the School of Landscape Architecture, Harvard University, issued a preliminary outline of its city-planning classification scheme, giving the main headings, with some indication of the material to be included in the fuller scheme. This preliminary outline may be obtained at ten cents a copy from the Harvard University Press after May 1. The City-planning Classification Scheme, with alphabetic subject-index, may be ordered in advance, or obtained as soon as issued (about June 1), at fifty cents a copy, from the Harvard University Press, Cambridge, Massachusetts.

**Road Machinery.**—Consul F. T. F. Dumont, Madrid, Spain, reports that a considerable amount of highway work is being done by the Ministeria le Fomento, Direccion General de Obras Publicas. While it is not likely that American contractors would be interested in this work, dealers in road machinery or possibly materials might be.



# WEEKLY CONTRACT NEWS

## ADVANCED INFORMATION

## BIDS ASKED FOR

## CONTRACTS AWARDED

## ITEMIZED PRICES

To be of value this matter must be printed in the number immediately following its receipt, which makes it impossible for us to verify it all. Our sources of information are believed to be reliable, but we cannot guarantee the correctness of all items. Parties in charge of proposed work are requested to send us information concerning it as early as possible; also correction of any errors discovered.

## BIDS ASKED FOR

STATE	CITY	REC'D UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
STREETS AND ROADS				
N. J.	Elizabeth	3 p.m., May 26	Hard surface pavement, 17,357 yds., etc.	J. L. Bauer, Co. Engr.
O.	Euclid	May 26	Sidewalks	F. H. Shoaff, V. Clk.
Ind.	Richmond	Noon, May 26	Imp. road	J. Howarth, Twnshp. Trustee
O.	Galion	Noon, May 26	Improving streets, 18,000 yds.	Ed. C. Yochem, Clk.
N. Y.	Batavia	8 p.m., May 26	Paving 11,200 yds.; concrete curb; storm sewer, 11000 ft.	R. L. Fox, City Engr.
D. C.	Washington	2 p.m., May 26	Sheet asphalt and bit. concrete	Dist. Comrs.
O.	Canton	10 a.m., May 26	Brick, 8 miles	J. H. McConnell, Co. Aud.
O.	Chillicothe	noon, May 26	Gravel road, 1 1/2 miles	R. D. Alexander, Co. Aud.
Ia.	Seymour	4 p.m., May 26	Cement sidewalks	D. H. Kerby, Mayor.
Mass.	Boston	noon, May 26	Sidewalks, curbs, tar macadam	L. K. Rourke, Comr. P. Wks.
Pa.	Uniontown	noon, May 26	Road, 3,500 lin. ft.	W. O. White, Eng.
Pa.	Altoona	2 p.m., May 27	Brick block, 2 streets	H. E. Gambell, Pres. B. P. W.
Del.	Wilmington	May 27	Macadam road, 0.6 mile	Jas. Wilson, Hwy. Comr.
Okla.	Fort Sill	10 a. m., May 27	Roads and walks	Constrn. Q. M.
Fla.	Pensacola	May 27	Granocrete, 22,000 yds.	G. Rommel, Jr., Ch. Engr.
N. J.	Elizabeth	3 p.m., May 27	Hard surface pavement, 30,000 yds.	J. L. Bauer, Co. Eng.
O.	Kenton	1 p.m., May 28	Macadam, 5 1/2 miles	County Comrs.
Ariz.	Phoenix	5 p.m., May 28	Bitulithic pavement	V. A. Thompson, Supt. Sts.
N. Y.	Brooklyn	11 a.m., May 28	Sheet asphalt, 4 streets	A. E. Steers, Boro. Pres.
Ill.	Elgin	10 a.m., May 28	Asphaltic concrete, 11,300 yds.	M. H. Brightman, Sec.
S. D.	Mitchell	1 p.m., May 28	Road, 16 1/2 miles	R. A. Zingle, Co. Aud.
N. J.	Hoboken	4 p.m., May 28	Repaving and imp.	J. H. Londrigan, C. Clk.
Mass.	Boston	noon, May 28	Granite blocks, brick, etc.	H. Bancroft, Ch. Dir.
Ind.	Laporte	10 a.m., May 29	Roads	F. A. Hansheer, Co. Aud.
Ind.	Laporte	May 29	Macadam road, 18 miles	F. A. Hausheer, Co. Aud.
O.	Orrville	noon, May 29	Imp. three streets	A. Jenny, C. Clk.
Ky.	Hopkinsville	4 p.m., May 29	Brick, sheet asphalt asphaltic concrete, 12,500 sq. yds.	C. M. Meacham, Mayor.
O.	Columbus	2 p.m., May 29	Concrete, .84 mile in Union Twp.	
			Macadam, 1 mile in Mad River Twp.	
			Brick, .84 mile in Union Twp.	
			Macadam, 1 mile in Willshire Twp.	Jas. R. Marker, St. Hwy. Comr.
O.	Deer Park	noon, May 29	Cement sidewalks	J. J. O'Leary, Mayor.
D. C.	Washington	2 p.m., May 29	Granite and sandstone curbing	Dist. Comrs.
O.	Columbus	2 p.m., May 29	Macadam, 2.5 miles in Napoleon	
			Brick, 1 mile in Cambridge	
			Concrete, 1.21 miles in Sandusky	Jas. R. Marker, St. Hwy. Comr.
Okla.	Durant	5 p.m., May 29	Asphaltic concrete, 18,000 sq. yds.	J. L. Foote, Mayor.
O.	C. Washington	2 p.m., May 29	Asphalt blocks, vit. bricks, curbing, sewer pipe castings	Dist. Comrs.
D.	Uhrichsville	noon, May 29	Park Valley Rd.	H. O. Snyder, Twnshp. Clk.
Pa.	Grove City	May 30	Brick, asphaltic concrete, etc., 8,500 yds.	L. L. McKay, Sec.
Canada	Oshawa	noon, May 31	Cement sidewalks, 25,000 sq. ft.	F. Chappell, Twn. Eng.
Ind.	Greencastle	2 p.m., May 31	Macadam, three roads	C. L. Airhart, Co. Aud.
O.	Sioux City	noon, May 31	Concrete, 3 1/2 blocks	Paul Wells, C. Clk.
Ala.	Red Bay	May 31	Surfacing with gravel; cost \$4,000	W. S. Keller, Hwy. Engr.
D. C.	Washington	May 31	Wood block at N. Y. Navy Yard; cost, \$15,000	Navy Dept.
Pa.	Butler	noon, May 31	Paving	School Board.
Wash.	Seattle	June 1	County roads, 6.4 miles	Co. Comrs.
Ala.	Abbeville	June 2	Sand clay, 9 miles; cost, \$8,000	W. S. Keller, Hwy. Engr.
Ind.	South Bend	June 2	Road in Lincoln Township	Co. Comrs.
Minn.	Winona	8.30 p.m., June 2	Wood block, 5,860 yds.; brick, 9,300 yds.	H. B. Walling, C. Eng.
Ind.	Vincennes	2 p.m., June 2	Gravel roads	J. P. Scott, Co. Aud.
Ind.	Kentland	2 p.m., June 2	Road	S. R. Sizelove, Aud.
Ind.	Greensburg	1 p.m., June 2	Macadam	L. W. Sands, Co. Aud.
Ind.	Jeffersonville	10 a.m., June 2	Gravel roads	G. W. Stoner, Co. Aud.
Ind.	Williamsport	1 p.m., June 2	Gravel road	D. H. Moffitt, Co. Aud.
Minn.	Minneapolis	June 2	Gravel road	A. T. Erickson, Co. Aud.
O.	Elyria	1 p.m., June 2	Macadam, 1,100 lin. ft.	F. L. Ellenberger, Co. Clk.
Pa.	Marcus Hook	8 p.m., June 2	Sidewalks and curbs	R. Mullen, Ch. Comm.
D. C.	Washington	2 p.m., June 2	Macadam	B. T. Galloway, Act. Sec.
Ind.	Delphi	noon, June 3	Imp. highway	M. G. Haun, Co. Aud.
Miss.	Fulton	June 3	Imp. 15 miles road	Hwy. Comm.
Ky.	Mt. Sterling	June 3	Brick asphalt bitulithic or tarvia, 9,440 yds.	W. A. Samuels, mayor.
Miss.	McComb City	June 3	Concrete sidewalks, 3,000 lin. ft.	O. B. Quinn, mayor.
Miss.	Forrest	June 3	Gravel, 5 miles; sand clay, 4 miles	O. B. Triplett, Ch.
Ind.	Logansport	10 a.m., June 3	Highways	J. W. Wallace, Co. Aud.
Ind.	Winnemac	June 3	Road	W. E. Munchenburg, Co. Aud.
Ind.	Crawfordsville	10 a.m., June 3	Gravel roads	B. E. Engle, Co. Aud.
Ind.	Monticello	10 a.m., June 3	Roads	A. G. Fisher, Co. Aud.
Ind.	Vincennes	2 p.m., June 3	Gravel roads	J. P. Scott, Co. Aud.
Wis.	Dodgeville	June 3	Sidewalks	City Clerk.
O.	Cleveland	11 a.m., June 4	Improving Linndale road	F. R. Lander, Co. Survey.
Ind.	Columbia City	noon, June 4	Paving road	C. E. Kiser, Co. Aud.
N. J.	Cranford	8 p.m., June 4	Cement walks, etc.	Edw. Mosher, Eng.
Ind.	Wabash	10 a.m., June 5	Gravel roads	D. E. Showalter, Co. Aud.
Ind.	Indianapolis	10 a.m., June 5	Culverts and repairs	W. T. Patten, Co. Aud.
Ind.	Fort Wayne	10 a.m., June 6	Highways, 16,000 lin. ft.	C. H. Brown, Co. Aud.
O.	Cincinnati	noon, June 6	Improving pike	S. Struble, Pres. Co. Comr.
O.	Springfield	2 p.m., June 6	Highways, 7 miles	F. Hirtzinger, Ch. Co. Com.
Wash.	Seattle	10 a.m., June 6	Grading, curbing, etc.	C. B. Bagley, Sec. B. P. W.
Md.	Frederick	June 9	State highway, 1 mile	L. G. Dinterman, Pres. Comrs.
N. Y.	Newburg	5 p.m., June 10	Paving Liberty street	City Clk.
Wis.	Madison	June 10	Asphalt, mixed macadam, 31,000 yds.	E. E. Parker, C. Eng.

## BIDS ASKED FOR

STATE	CITY	REC'D UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
O., Cleveland	11 a.m., June	11.. Imp. road		F. R. Lander, Co. Survey.
Ky., West Covington	8 p.m., June	12.. Bit. macadam, etc.		R. L. Kennedy, C. Clk.
Ind., Ligonier	7.30 p.m., June	12.. Brick asphalt, wood Dolarway, 5,700 yds.		R. E. Jeanneret, C. Clk.
Fla., Jacksonville	3 p.m., June	12.. Dolarway, asphaltic concrete, vit. blocks, granitoid, asphalt blocks, 93,000 yds.		H. Gaillard, Ch. P. Wks.
N. J., Rutherford	8 p.m., June	13.. Vit. brick, 25,800 yds.		F. A. Stedman, Boro. Clk.
O., Wyoming	noon, June	14.. Concrete curbs and gutters		G. H. Eversman, Vil. Clk.
O., Struthers	noon, June	16.. Vit. brick		I. Eisenbraun, Clk.
SEWERAGE				
Ind., Danville	May	26.. Sanitary sewer system; cost, \$19,000		Town Trustees.
O., Gallion	noon, May	26.. Sanitary and storm sewers, 45,529 ft.		E. C. Yochem, C. Clk.
Ind., Hammond	10 a.m., May	26.. Sewer		J. L. Rohde, Ch. B. P. W.
O., Maumee	noon, May	26.. Sewer		G. V. Rabb, Vil. Clk.
Mich., Port Huron	11 a.m., May	26.. Concrete sewer, 2,100 ft. 40-in.		G. Ross, C. Clk.
Minn., Black Duck	8.30 p.m., May	27.. Imhoff tank		D. D. Rolfe, Vil. Recorder.
Ind., Huntington	May	27.. Vit. pipe, 12 to 20-in. 3,000 ft.		H. R. Young, C. Clk.
O., Columbus	noon, May	27.. Sewers in several streets		S. A. Kinnear, Dir. P. S.
Pa., Pottstown	May	27.. Sewers, 30 1/2 miles 6 to 30-in.		Sewer Comm.
Ky., Henderson	9 a.m., May	27.. Corrugated metal culverts		S. H. Kimmel, Engr.
Conn., Waterbury	4 p.m., May	27.. Sewers, several streets		R. A. Cairns, C. Eng.
Ky., Louisville	2 p.m., May	27.. Sewers		Bd. of Pub. Wks.
Pa., Harrisburg	2 p.m., May	28.. Disposal plant and water works for hospital		S. G. Dixon, Comr.
Pa., Hamburg	2 p.m., May	28.. Sewerage system at hospital		S. C. Dixon, Comr.
N. Y., Elmira	11 a.m., May	29.. Trunk sewer, 1,652 lin. ft. 24-inch vit. tile; 84 lin. ft. 24-inch cast-iron pipe		O. H. Gardner, City Clk.
O., Shelby	noon May	29.. Sewage treatment plant		Bert Fix, Vil. Clk.
Ia., Eldora	June	1.. Extensions, cost \$15,000		S. B. Gardner, Eng.
Miss., Laurel	2.30 p.m., June	1.. Sewers, 4 1/2 miles 8 to 15-inch		D. A. Scarborough, City Clk.
O., Ravenna	June	2.. Settling tanks & siphons; cost, \$10,000		W. H. Linton, Dir.
Ala., Birmingham	noon, June	3.. Concrete sewer, 4,000 ft. 8x12, 6,000 ft. 5x8 brick; 10,000 ft. laterals		W. G. Kirkpatrick, C. Eng.
Mich., Flint	2 p.m., June	3.. Sewers, 33 miles 8 to 66-in.		D. E. Newcomb, C. Clk.
N. J., Secaucus	8 p.m., June	3.. Sewer system		A. Post, Boro Clk.
N. J., Paterson	4 p.m., June	3.. Sewers		Bd. of Pub. Wks.
N. Y., Batavia	June	4.. Two miles storm sewers, 10 to 20 in.		R. L. Fox, City Eng.
N. Y., Oswego	2 p.m., June	4.. Sewers, 9,700 ft. 8 to 36-in. & 5,865 ft. vit. tile, 15 to 72-in.		J. Smith, Comr. Works.
Pa., Reading	June	4.. Concrete sewers, 6,600 ft.; vitrified pipe, 3,900 ft.		E. B. Ulrich, City Engr.
O., Sabina	noon, June	5.. Sanitary sewer		P. H. Sparks, Vil. Clk.
N. Y., Mt. Morris	noon, June	5.. Sewer system		J. A. Striker, Vil. Clk.
Ind., Logansport	June	10.. Brick and pipe sewers; cost, \$44,000		H. H. Thompson, C. Eng.
Ark., Brinkley	8 p.m., June	12.. Sewers, 7 miles 8 to 12-in.		B. Emmons, Ch. Comrs.
Cal., San Diego	June	15.. Two septic tanks		W. O. Sandford, C. Eng.
Va., Pulaski	3 p.m., June	17.. Vit. pipe, 10 miles 6 to 18-in.		J. T. Loving, Mayor.
N. J., Newark	July	1.. Three centrifugal pumping engines		J. S. Gibson, Clk. Comrs.
WATER SUPPLY				
N. C., Fort Caswell	May	26.. Concrete reservoir, 400,000 gals.		J. R. Campbell, Comr.
Ill., Moline	2 p.m., May	26.. Pump and pit		L. O. Jahns, Comr.
Ala., Mobile	May	26.. Culvert pipe, any kind		Bd. of Revenue.
N. J., Jersey City	2 p.m., May	26.. Furn. valves		E. B. See, Clk.
Cal., Oxnard	8 p.m., May	27.. Water plant; cost, \$100,000		G. R. Bellah, C. Clk.
Wis., Cumberland	5 p.m., May	27.. Water main, 4-in.		A. J. Chubb, Clk.
Wis., Oconto	2 p.m., May	27.. Gal. steel tower, 75 ft.		H. C. Orr, Co. Clk.
D. C., Washington	May	28.. Deep well pumping plant at London, Ky.		Superv. Arch.
Ont., Ft. William	May	29.. Tunnels under rivers		City Clk.
O., Vermillion	May	29.. Water main, 2,300 ft. 6-in.		A. E. Beeckel, Clk.
Ky., Madisonville	May	29.. Concrete dam, 10 miles main, pump, etc.		W. J. Dulin, Secy. Bd.
Canada, Dunnville	9 p.m., May	31.. Water main, 10,000 ft.		R. G. Kyd, Supt.
N. Y., Upper Jay	June	1.. Water works system		K. O. Beede, Ch. Com.
Ky., Lexington	June	2.. Earthen dam		Hydraulic & Mfg. Co.
Neb., Ralston	10 a. m. June	3.. Cast-iron pipe, 31,000 ft., 4 to 8-in.		C. M. Skinner, Ch. V. Bd.
Wis., Dodgeville	June	3.. Waterworks		City Clerk.
Md., Baltimore	11 a.m. June	4.. Mechanical filters, 32 catch basins, etc.		James H. Preston, Mayor.
Ill., Galesburg	June	5.. Sinking well, steel plates, etc.		J. P. Evans, Ch.
O., Cleveland Heights	Noon, June	10.. Water pipe, 8-in.		H. Canfield, Vil. Clk.
Mont., Billings	June	17.. Pumping plant		C. E. Durland, City Engr.
Egypt, Cairo	July	1.. Furn. equipm't for pump'g station, 7,000,000 meters.		Pub. Works Ministry.
LIGHTING AND POWER				
Minn., Willmar	May	26.. Ornamental lighting post		Hans Gunderson, C. Clk.
Ind., Jasper	7.30 p.m. May	26.. Power plant and apparatus		J. A. Wuchner, Clk. Trustees
O., Cleveland	noon, May	27.. Boiler		W. J. Springborn, Dir. P. S.
N. Y., West Seneca	4 p.m., May	28.. Tungsten lamps, 306		Twn Clk.
N. J., Woodbridge	8 p.m., May	31.. Lighting streets		B. J. Dunnigan, Ch. Comrs.
Minn., Eveleth	June	3.. Pump, 1,000,000 gals.		D. P. McIntyre, C. Clk.
N. J., Linden	8.30 p.m., June	4.. Forty gas or elec. lights		C. H. Smith, Boro. Clk.
N. J., Camden	8 p.m., June	15.. Power station, boiler & generating equipment, electrical work for station & distribution system		F. A. Finkelday, Chrmn. Com.
N. J., Camden	June	16.. Underground conduits, 219,000 ft., subway, 24,000 ft., 128 standards, &c.		C. Council.
FIRE EQUIPMENT				
Wis., Green Bay	3 p.m., May	27.. Automobile for chief		H. Porth, Ch. Com.
N. J., Kearney	May	28.. Motor triple combination apparatus		Twn. Council.
Pa., Franklin	May	29.. Comb. auto hose and chemical, Kanawha tanks		Ch. Fire & Water Com.
D. C., Washington	2 p.m., May	29.. One chief's car, two chemical and hose cars		Dist. Comrs.
Ill., Rock Island	May	31.. Motor hose & pump, auto ambulance		H. M. Schriver, Mayor.
N. J., Plainfield	June	2.. One motor comb. pumping engine and hose wagon		Common Council.
BRIDGES				
R. I., Woonsocket	May	28.. Concrete bridge		F. H. Miller, C. Eng.
O., Youngstown	11 a.m. May	28.. Reconstructing abutments and pedestals		I. M. Hogg, Co. Aud.
Fl., Streater	2 p.m., May	31.. Concrete bridge		F. Burtwell, Twn. Clk.
Ind., Rockport	2 p.m. June	2.. Constrn. 11 bridges		J. T. Stevenson, Co. Aud.
Ind., Hartford	10 a.m., June	2.. Six culverts and bridges		J. Cronin, Jr., Co. Aud.
Utah, Salt Lake City	10 a.m., June	2.. Concrete bridges		L. P. Palmer, Co. Clk.
Ala., Birmingham	June	3.. Reinforced concrete bridges		W. G. Kirkpatrick, C. Eng.
Va., Lewisburg	June	3.. Concrete bridges		J. E. Bougher, Eng.
O., Hamilton	June	4.. Several concrete bridges		Co. Comrs.
O., Cleveland	11 a.m., June	4.. Two concrete bridges		F. R. Lander, Co. Surveyor.
O., Springfield	2 p.m., June	5.. Reconstructing three bridges		J. M. Pierce, Co. Aud.
O., Toledo	10 a.m., June	6.. Bridge at Boncroft St.		C. J. Sanzenbacher, Co. Aud.
D. C., Washington	2 p.m., June	24.. Seven-span concrete bridge		District Comrs.
Minn., Montevideo	June	Reinforced concrete and spillway		M. E. Chamberlain, C. Eng.



## BIDS ASKED FOR

STATE	CITY	REC'D UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
MISCELLANEOUS				
N. J., Belleville....	8.30 p.m., May 28..	Town hall .....	C. L. Denison, Mayor.	
D C., Washington....	2 p.m., June 2..	Lathe with motor.....	Dist. Comrs.	
Okla., Wakita .....	June 2..	Woven wire fence.....	F. L. Clinesmith, Twn. Clk.	
Fla., Tampa .....	noon, June 3..	Jail .....	J. L. Hackney, Chrmn. Comrs	
D. C., Washington .....	June 5..	Crematory, pig lead, valves, vit. pipe, tar, etc.....	Genl. Purch. Officer.	
N. Y., Peekskill .....	noon, June 10..	Jail, police quarters, court, etc.....	Vil. Clk.	
La., Mandeville.....	7.30 p.m., June 20..	Sea wall .....	W. G. Davis, Mayor.	
Cal., Los Angeles .....	June 20..	Bldg. & operating garbage disposal plant. Reduction or incineration .....	Bd. of Public Works.	
N. Y., New York.....	10 a.m., July 7..	Motor trucks, one to ten.....	M. G. Zalinski, Q. M.	

## STREETS AND ROADS

**Birmingham, Ala.**—Construction of good roads is advocated.

**Montgomery, Ala.**—Trunk system of public highways will be mapped out by Engineer W. S. Keller of highway department.

**Tempe, Ariz.**—Improvement of two principal streets is planned.

**Los Angeles, Cal.**—Plan is being considered for widening of South Olive st.

**Pasadena, Cal.**—Paving of Lake ave. is being discussed.

**Redwood City, Cal.**—County Surveyor J. V. Neuman has been ordered to prepare at once specifications for bay shore road to San Francisco, stretches of State highway lying in incorporated cities and grading of scenic ocean boulevard. Bay Shore road runs from State highway at San Bruno to county line. San Francisco supervisors will build road on bay shore to meet it, \$75,000 already being available for that purpose.

**Sacramento, Cal.**—Senate has adopted Senator Birdsall's bill, No. 172, appropriating \$10,000 for surveying and construction of state highway between Oregon House, in Yuba county, and Goodyear Bar, in Sierra county.

**Sacramento, Cal.**—Sale of \$1,200,000 worth of California highway bonds has been authorized by state engineering advisory board. Sale date will be about a month hence.

**Santa Monica, Cal.**—Ordinance has been passed for improvement of Fremont ave., from ocean west to Sawtelle on east.

**Woodland, Cal.**—Petition will be filed before board of supervisors in behalf of Reclamation District No. 537, asking that district, under state law, be set apart as road district for purpose of constructing macadamized roadway five miles in length on river front of district. Proposed road will join with concrete roadway of the West Sacramento Co. at Riverbank, on east, and with Elkhorn macadamized roadway on west.

**Denver, Colo.**—State Highway Commission has apportioned \$211,000 among 48 counties in five new highway districts of the state, to be expended in construction, and improvement of official state roads.

**Bridgeport, Conn.**—City engineer and director of public works have revised plans for grading of Boston ave. and new bids will be advertised.

**Stratford, Conn.**—Improvement of North Main st. is planned.

**Delaware City, Del.**—After long discussion, city council has decided to ask for bids for laying of 3,000 feet of concrete, 50 feet wide, on Clinton st. Sum of \$10,000 has been authorized for the purpose.

**New Castle, Del.**—City Council has given third reading to ordinance authorizing bond issue of \$30,000 for street improvement.

**Wilmington, Del.**—Wilmington Council is preparing to issue \$150,000 bonds, money to be delivered to street and sewer department for construction of new streets.

**Jacksonville, Fla.**—Last installment of good roads bond issue in Duval county in sum of \$250,000 has been sold to Estabrook & Co. of New York.

**Jacksonville, Fla.**—Improvement of Beaver st. has been ordered.

**Tallahassee, Fla.**—Senate committee on public roads and highways has favorably reported Senator Stringer's bill providing for building of system of good roads in this state, with amendment cutting down amount of bonds authorized to be issued just one-half.

**Atlanta, Ga.**—Street committee of council has adopted new grade for Whitehall st., from Mitchell st. to Brotherton st., and recommended that finance committee appropriate \$30,000 in June

budget to begin work. Estimated cost of work is \$47,288.

**Chicago, Ill.**—Widening of Michigan ave. is being planned.

**Indianapolis, Ind.**—Bid on 150,000 gallons of road oil, submitted by Albert F. Zearing, has been rejected by board of County Commissioners and new bids will be asked. Zearing's price was 5.45 cts. per gallon.

**Muncie, Ind.**—Bonds for construction of Scott road in western part of township have been sold by County Treasurer George L. Haymond, in sum of \$5,600, to J. F. Wild Co., of Indianapolis.

**Des Moines, Ia.**—Boulevard will be established along west bank of Des Moines river between Center and Union sts.

**Waterloo, Ia.**—Members of board are discussing the 140 miles of through county roads which will be improved in Black Hawk county. These will probably extend in following directions: East to Jesus either by Independence or the road that passes south of Raymond. From La Porte City to Janesville, using the Cedar Falls road on the east side of the river a part of the way. South on the Eagle Center road to Traer and branching to other towns in that direction. The new Whitney road to Cedar Falls, for which a profile has been made. The road to Hudson.

**Fort Scott, Kan.**—Improvement of Oak st. has been authorized. S. D. Barnett, councilman.

**Fort Scott, Kan.**—Resolutions have been adopted for improvement of various streets.

**Leavenworth, Kan.**—Resolution providing for paving Spruce st., from Second to Fifth sts., has been adopted, and city engineer has been instructed to prepare specifications for the work.

**Baton Rouge, La.**—City of Baton Rouge proposes to vote on May 27 bond issue of \$225,000, of which \$90,000 is set aside for paved and graveled streets that would link city streets up with graveled roads of country.

**Bangor, Me.**—Reconstruction of approaches to Bangor and Brewer bridge is being discussed, estimated cost, \$10,000.

**Portland, Me.**—Department of Public Works has authorized improvement of various streets. Bion Bradbury, Jr., Comr. of Public Works.

**Baltimore, Md.**—Governor Goldsborough has called meeting of Board of Public Works when it will be decided whether or not State shall offer for sale on July 1, road bonds of par value of \$1,000,000.

**Baltimore, Md.**—Widening of Aisquith st., between Fayette and Baltimore sts., has been authorized.

**Baltimore, Md.**—Paving commission will adopt long list covering 27.39 miles of city streets to be placed under contract for improvement during remainder of year. Streets included in this list will be grouped into contracts at once, advertised and awarded.

**Baltimore, Md.**—Following are bids received for street improvement work: For Opening Streets Contract No. 106, calling for bituminous concrete, the Elder Co. bid \$1.38 a sq. yd. Flanagan was the next lowest at \$1.55 and the Cranford Co. the third lowest at \$1.62. Elder bid, \$1.70 a sq. yd. for Contract 112, while Cranford Co. was next lowest at \$1.78 a sq. yd. Flanagan bid \$1.74 a sq. yd. for this contract, but is apparently beaten by Cranford on grading item. Bid of Elder Co. for bituminous concrete contract No. 113 was \$1.38, while Cranford Co., next lowest, bid \$1.60 a sq. yd. For sheet asphalt contract No. 116, Elder bid \$1.70 a sq. yd. as against \$1.78 by the Cranford concern. The bid of the Elder Co. for bituminous concrete contract No. 117 was \$1.38 and that of the Cranford Co., the next lowest, \$1.58. For final commission for opening streets

contract No. 114, calling for bituminous concrete, Elder bid \$1.38 per sq. yd., while bid of Cranford Co. was \$1.58. For paving commission contract No. 53, Elder bid \$82,745.50, while bid of Patrick F. Reddington, next lowest bidder, amounted to \$86,042. Contract 55, for vitrified brick for the paving commission, will apparently go to Patrick F. Reddington at his bid of \$2.21 per sq. yd. Should city decide to award contracts on which Elder Co. is low to that company \$11,039.20 will be saved.

**Baltimore, Md.**—Board of Public Works has decided to sell on July 1 bonds for state roads loan of 1912 in sum of \$1,170,000.

**Bel Air, Md.**—The Hartford County Commissioners have appropriated \$15,000 for macadamizing road from Hughes Hill to the Pennsylvania line.

**Betterton, Md.**—Plans are being pushed to build an improved road from Betterton, Kent county, to Still Pond, a distance of five miles, at a cost of \$26,000.

**Lowell, Mass.**—Order to borrow \$17,000 to widen and macadamize Nesmith st. at its junction with Rogers and to widen and macadamize Rogers st., from Nesmith st. to Boylston st., is being considered.

**New Bedford, Mass.**—City Engineer Nye has estimated cost of grading Query st. to be \$1,000, and board has ordered the work.

**Lowell, Mass.**—Municipal council has voted to borrow \$9,000 to complete paving for which money was appropriated last year.

**Lowell, Mass.**—Extension of Fairmount st. at cost of \$5,500 has been taken up.

**Alma, Mich.**—It has been decided that Alma will pave again this year. In factory district roads are in bad shape, and council has asked a company to figure on cost of paving seven blocks. No special election will be held.

**Mt. Pleasant, Mich.**—City Council has decided to continue paving of streets of city, which was started in 1911. Material used this year will be concrete, and Broadway will be paved to Ann Arbor railway tracks; Norman, from Broadway to Michigan; Michigan, from Normal to Washington, and Washington st., from Michigan to Broadway. Work will be started in the near future.

**Saginaw, Mich.**—Clerk has been authorized to advertise for bids on sidewalk construction.

**Saginaw, Mich.**—Sprinkling of streets is being considered.

**Grand Rapids, Minn.**—County commissioners have advertised for bids for construction of approaches to new bridge over Mississippi, west of town, and for stretch of road beyond bridge, contract to include both approaches and road.

**St. Paul, Minn.**—Paving of Marshall ave. is being discussed. City Engineer Claussen has submitted estimates as follows: Creosoted blocks, \$7.58 a front ft.; brick, \$6.32; asphalt, \$6.06, and asphaltic concrete, \$5.53. Total cost of blocks is estimated at \$229,178.70, and limit to assessment is \$194,417. To these figures 44 cts. a ft. should be added for curbing, \$29 for water connections on the north side, \$46 for south side, \$16 for gas on north side and \$9 on south side.

**West Duluth, Minn.**—Sum aggregating over \$40,000 will be spent on county roads leading out of western end of city by Commissioner Charles Kauppi this summer.

**Poplar Bluff, Mo.**—Petitions have been presented to City Council for paving three more streets in residence section of city. Total amount to be paved will be about 3,500 ft. Council has passed paving ordinance, and as soon as possible actual laying of pavement will be started.

**St. Joseph, Mo.**—Ordinance has been passed for improvement of various streets.

**Bogeman, Mont.**—Construction of boulevard to reach from city limits north is being discussed.

**Concord, N. H.**—Resolution authorizing bond issue of \$300,000 for completion of three trunk line highways has been introduced.

**Portsmouth, N. H.**—Petitions have been received for opening of three new highways.

**Camden, N. J.**—Ordinance has been passed directing paving of Vine st., from Ninth st. to Tenth st.; Pear st., from Louis st. to Norris st., and Clover st., from Kaighn ave. to Sycamore st., with sheet asphalt, on a 4-in. concrete foundation.

**Hammononton, N. J.**—Atlantic County Board of Freeholders has decided to treat Bellevue ave. and Main road to heavy coats of "glutrin," a vegetable road binder.

**Hammononton, N. J.**—Atlantic county board of freeholders has decided to widen bridge on Atsion road, and to treat Bellevue ave. and Main road, Hammononton, to heavy coats of "glutrin," a vegetable road binder.

**Jersey City, N. J.**—Resolutions have been adopted for improvement of various streets.

**Long Branch, N. J.**—Considerable road work is being planned.

**Newton, N. J.**—State aid for improvement of Main, Spring and Water sts., to connect Stanhope and Branchville roads, on opposite sides of the town, has been promised by State Road Commissioner E. A. Stevens.

**Paulsboro, N. J.**—Council has decided to treat some of streets with preparation said to be more effective in laying dust than oil.

**Roselle Park, N. J.**—Borough Engineer Luster has been instructed to prepare plans and specifications for improvement of Locust st., Walnut st., Union ave., Grant ave., and Sheridan ave.

**Trenton, N. J.**—Oiling of streets in section of city is being discussed.

**Trenton, N. J.**—State Road Commissioner Edwin A. Stevens at conference with road committee of board of freeholders has approved plans and specifications for building of Hopewell, Mt. Rose and Rosedale road, and also Yardville-Windsor and Newton road. It is estimated that cost of construction of both thoroughfares will be \$130,000.

**Albany, N. Y.**—Executive Auditor John A. Hennessy has recommended cancellation of contracts for constructing Brookhaven-Bay Shore route and the Port Jefferson-Smithtown route for State roads on Long Island. New specifications will be advertised immediately and new contracts entered into.

**Brooklyn, N. Y.**—Resolutions have been adopted for considerable paving work in Brooklyn and in Queens.

**Fort Plain, N. Y.**—Village board has decided to hold special election at town hall May 26 for purpose of voting whether sum of \$10,000 should be raised for purpose of macadamizing various streets.

**Hornell, N. Y.**—Citizens have voted in favor of paving East ave., from East Main st. to city limits. Cost about \$16,000.

**Greenwich, N. Y.**—Senate and House have authorized issuing of \$600,000 pavement bonds for Greenwich.

**Niagara Falls, N. Y.**—Common council has ordered paving of Thirteenth st., from Lockport st. to North ave., and paving of 9-ft. strip in middle of Highland ave., from Virginia ave. to Whirlpool st.

**Niagara Falls, N. Y.**—Board of Supervisors have adopted resolution calling for improvement of two roads in county at total cost of \$50,000. Bid for work will be asked for at once. One road runs from Porter Centre south through Model Town, and the other branches off the Lake Road to the Slayton Settlement Road. County bears 70 per cent. of the cost and towns 30 per cent.

**Schenectady, N. Y.**—Petition has been presented asking that creosoted wood block pavement be used to replace granite blocks on lower State st. At board of contract's next weekly meeting secretary will be authorized to advertise for bids for repaving lower State st., from canal bridge to Washington ave.

**Schenectady, N. Y.**—Board of contract and supply has adopted plans for repaving of Albany st., east from Crescent Park to Craig st.

**Utica, N. Y.**—Resurfacing of certain paved streets is recommended.

**Charlotte, N. C.**—City has ordered another batch of \$50,000 special street improvement bonds sold.

**Akron, O.**—Road improvements are being planned.

**Dayton, O.**—Bonds have been sold for improvement of Wayne ave. in sum of \$11,200; and also for following: Neibert st., \$5,800; Laura ave., \$4,000; Bolander ave., \$14,500; Clifton drive, \$5,600; Dailer st., \$1,500; Gillespie st., \$1,300; Carlisle ave., \$12,600; Dennison ave., \$2,100; Glendale ave., \$2,900; Miami Chapel road, \$9,500; Cincinnati st., \$4,700; McDonough st., \$5,800.

**Hamilton, O.**—City council has passed ordinance to issue \$100,000 of emergency bonds for street cleaning purposes.

**Hamilton, O.**—City Council has decided to issue \$100,000 worth of street cleaning bonds.

**Sidney, O.**—The \$88,000 worth of bridge improvement bonds and the \$13,750 worth of pike improvement bonds issued for purpose of repairing pikes and bridges damaged in recent flood have been sold by county commissioners Monday afternoon to the Hayden-Miller Company of Cleveland.

**Springfield, O.**—Paving of East Main st., from Freeman st. to Clairmont ave., and from Clairmont ave. to corporation line, will be recommended by street committee of council.

**Toledo, O.**—Ordinances have been adopted for improvement of various streets. J. M. Babcock, clerk of council.

**Toledo, O.**—By vote of 15 to 3 city council has passed ordinance providing for oiling of macadam roads in city. Streets to be oiled will be decided by Service Director Cowell.

**Youngstown, O.**—Bids will be received until 2 p. m., June 9, at office of city auditor for purchase of following bonds: \$2,000, Oak st. grade crossing bonds; \$8,000, Erie grade crossing bonds; \$2,000, Himrod ave. grade crossing bonds; \$3,600, city's portion of improvement bonds; \$3,000, city's portion of improvement bonds; \$400, Clifton st. improvement bonds; also bonds for paving Inglis st., repairing Hazel st., and for paving various streets. D. J. Jones, City Auditor.

**Antlers, Okla.**—Campaign is being waged for good roads.

**Oreoc, Ore.**—Plans are being made for construction of 3 miles of sidewalks.

**Chester, Pa.**—Highway committee has recommended that Washington st., between Providence road and Gayley st., be paved with Amasite.

**Erie, Pa.**—Construction of direct road between Erie and Pittsburgh is being discussed.

**Hazleton, Pa.**—Various street repairs have been ordered.

**Lansford, Pa.**—Ordinance is before Lansford Council for paying of some of principal streets with vitrified brick at cost of \$32,000.

**Lebanon, Pa.**—Extensive state road work has been planned.

**Lebanon, Pa.**—Resolution instructing highway commissioner to repair streets in sewer district, in downtown section and to appropriate \$3,500 for work has been passed.

**Philadelphia, Pa.**—Paving of South st. with wood blocks from Fifth st. to Delaware river is petitioned for.

**Phoenixville, Pa.**—Oiling of streets is being discussed.

**Reading, Pa.**—Ordinances have been passed for macadamizing the following streets: Fairview, Reading, Terrace, Belmont, Lincoln and Trent aves. and Wyonising and Reading boulevards.

**Saukertown, Pa.**—Paving of Pennsylvania ave. is under consideration.

**Sharon, Pa.**—Election will be held June 12 for voting on \$50,000 bond issue with which to make necessary street improvements.

**Sharon, Pa.**—Work on resurfacing of Sharon-Mercer state road between Sharon and present terminus will be started within next two weeks and will be rushed to completion.

**York, Pa.**—Improvement to borough highways have been decided upon by West York Council. Market st. will be macadamized on south side, from city limits to Overbrook ave., crossings will be placed and property owners will be notified to lay curbing and sidewalks.

**Providence, R. I.**—Resolution has been passed requesting Board of Aldermen to lay out Cedar st., from Brayton ave. to Bradford st.; also to widen Arlington ave.

**Charleston, S. C.**—Extension of Summerville highway to Cain's Cross roads has been authorized.

**Deadwood, S. D.**—At special session of Board of County Commissioners of Lawrence county, majority of members voted to expend \$50,000 on road which will run west from city to Lead into Spearfish canyon. Work is to commence at once as county engineer furnished estimates of cost, which have been accepted by board, and he was instructed to commence building road which leads over Summit hill, one of high points in this section.

**Sioux Falls, S. D.**—Petition to pave Prairie ave., from Sixth to Twelfth sts., inclusive, is being circulated.

**Greeneville, Tenn.**—Citizens have voted in favor of \$500,000 road bonds.

**Nashville, Tenn.**—Citizens of Dickson county have voted to issue \$250,000 road bonds.

**Beaumont, Tex.**—Resolution indorsing proposed bond issue of \$500,000 for good roads has been adopted.

**Denton, Tex.**—County commissioners have ordered election June 7 in Pilot Point district, in northern part of county, on issuance of \$125,000 good roads bonds.

**Freeport, Tex.**—Plan is being considered providing for building of 75 miles of shell roads in southern section of Brazoria county.

**Robert Lee, Tex.**—Coke county has planned extensive road improvement.

**Sherman, Tex.**—City has accepted proposition of Commissioners' Court to build nine miles of streets in Sherman, streets to be 20 ft. wide and covered with 8 ins. of gravel.

**Salt Lake City, Utah.**—Bond issue of \$1,000,000 for construction of complete system of highways in Salt Lake county is recommended.

**Richmond, Va.**—Administrative board has directed city engineer to prepare detailed plans showing property necessary to be acquired to connect Riverside Park with First st., with view of continuing driveway through Arch st., or by viaduct over Chesapeake and Ohio yards to Gamble's Hill Park.

**Tazewell, Va.**—Proposed road from Bluefield to Bristol is being discussed.

**New Martinsville, W. Va.**—Good roads movement in Wetzel is being discussed. Bonds from \$100,000 to \$200,000 will be voted on by citizens of Grant district shortly.

**Clarkston, Wash.**—Construction of concrete roadway to cost about \$40,000 has been recommended. It would extend from city limits of Asotin to city limits of Clarkston.

**Tacoma, Wash.**—County Engineer M. R. Thompson has taken up with state highways department plan of making hard-surfaced roadway in Mount Tacoma forest reserve concrete instead of macadam, as has been planned. The fund for work consists of \$25,000.

**Walla Walla, Wash.**—Bonds in sum of \$16,000 will be sold by city council for paving of E. Alder st.

**La Crosse, Wis.**—About 50 blocks of macadamized street will be oiled this spring and board of public works has been ordered to purchase four tank cars of road oil from National Oil Company. Board will pay \$4.61½ a hundred gallons for about 30,000 gallons of oil. It has been voted to divide four cars evenly between north and south sides of city.

**Superior, Wis.**—Estimate of approximate cost per lot for different paving materials on which bids were submitted for improvement of Grand ave., from North Third st. to Belnap st. has been prepared by Secretary John Stewart of board of public works. On basis of 35 lots, cost for each 25-ft. lot runs as follows: Concrete, rock mixture, \$121; concrete, gravel mixture, \$116; Pioneer sheet asphalt, \$146.50; Trinidad sheet asphalt, \$157; asphaltic concrete, Warren Bros. process, \$174; Bermudez mixture, \$153.50; Pioneer mixture, \$139.50.

**Superior, Wis.**—Resolution has been passed ordering south alley between Winter and Broadway sts. repaved from Tower to Ogden ave. Plans and specifications for work have been ordered prepared.

#### CONTRACTS AWARDED.

**Augusta, Ark.**—To Joe Cole, contract to construct 30 miles of roads in Woodruff county improvement district No. 1. Work will begin at once. About 10,000 cu. yds. of crushed rock will be used.

**Los Angeles, Cal.**—By Board of Public Works for following street paving contracts: Crocker st., from Fourth to Ninth sts., Benjamin Ford and Fred H. Stout, of Los Angeles, \$26,169.74; 25th st.,



from Raymond to La Salle ave., Fairchild-Gilmore-Wilton Co., of Los Angeles, \$16,502.18; Hobart boulevard, from 29th to Jefferson st., Barber Asphalt Paving Co., of Philadelphia, Pa., \$10,365.82.

**Hartford, Conn.**—Contract for resurfacing Farmington ave., to Edward Balf Co., of Hartford, for \$21,815. For laying new asphalt surfacing on portions of Front, Morgan, and Pleasant sts. and Marsh court, the contract to Edward Balf Co., for \$23,111.45. For laying granite block pavement on Spruce and Front sts., the contract to F. B. & W. H. O'Neil for \$7,562. Bid of Union Paving Co. has been rejected for non-conformity with specifications.

**Palatka, Fla.**—By city contract for 3 miles of concrete sidewalks to O. B. Webster, of Deland, at 81% cts. per sq. yd.

**Chicago, Ill.**—To John A. McGarry & Co., Security Bldg., contract for macadam driveway, about 15,000 sq. yds. for \$16,611.

**Freeport, Ill.**—By Board of Local Improv. contract for paving Cottonwood, Foley and Powell sts. with macadam concrete, curb and gutter to the Gund-Graham Co., of Freeport, for \$13,096, and for paving Washington and Williams sts. with brick and sand stone curb, for \$13,097.

**Ottawa, Ill.**—Lowest bid received by City Council for cleaning paved streets was that of Fred Scherer at \$1,798.51.

**Springfield, Ill.**—By Board of Local Improv. contract to Richard Egan for paving 2 blocks of Cook st., asphalt filler, concrete foundation, at \$1.60 per sq. yd.

**Fort Wayne, Ind.**—By Board of Public Works, to Fort Wayne Foundry & Machine Co., contract for installing new walks on both sides of Spy Run bridge.

**Fort Wayne, Ind.**—By County Commissioners three contracts for stone roads, total of prices being \$22,784. Morgan road, in Monroe township, went to Thomas Singer, of Dixon, O., on bid of \$8,395. Engineer's estimate on road was \$8,432.32. Erie Stone Co. got Clem road, in Monroe township, on bid of \$4,890. Engineer's estimate was \$5,145. Same company also got contract for Gustin road in Maumee township on bid of \$7,499. On this engineer's figures were \$7,563.54. All three of bids were lower than estimates. Putnam & Clause will do sub-contract work for Erie Stone Co. on two roads.

**Hartford City, Ind.**—To Albert Claimne, Hartford City, contract by county commissioners, for construction of Charles Mannix road, at \$8,139. James Mannix road has been awarded to same contractor at \$14,400.

**Muncie, Ind.**—To William Birch contracts by board of public works as follows: For paving of the roadway of Ohio ave., from Main st. to Washington st., \$1.75 per sq. yd., for Terre Haute brick, with cement curb and gutter at 44% cts. per lin. ft.; for construction of a cement sidewalk on Monroe st., from Charles st. south in various portions, at 53% cts. per lin. ft.; for cement sidewalk on east side of Plum st., from Jackson st. south to first alley, at 54% cts. per lin. ft.; for construction of cement sidewalk on each side of North st., from Walnut st. to Madison st., at 54% cts. per lin. ft.

**Monticello, Ind.**—To L. T. Kent, Brookston, contract by White county commissioners, for construction of Chas. E. Clay road, at \$18,849. Work includes three miles of macadam road, bridges, etc.

**South Bend, Ind.**—To Harry N. Barnes contract for paving Prairie ave. by board of work.

**Wabash, Ind.**—To Taber & Hullihan, contract by Wabash county commissioners, Wabash, for construction of four stone roads in Noble township, at \$49,920.

**Clear Lake, Ia.**—To Garland & Shaffer, of New Hampton, Ia., contract by City Council for paving of number of city streets, at \$1.26 per sq. yd.

**Fort Dodge, Ia.**—By council for construction of sidewalks in District No. 1 to Jensen Construction Co. at 9% cts. per ft., and to Conway Sons' Co., for work in District No. 2 at 9 1-5 cts. per ft.

**Muscantine, Ia.**—By City Council contract to Ford Paving Co., of Cedar Rapids, for paving as follows with bitulithic, Park and Oakland drives, Mulberry ave., W. 8th st., Linn, Lucas and Cedar sts. and Bway., and with brick, 84th st., Cypress to Islet ave. to Dale st. Cost, about \$90,000. Also to Korneman Constr.

Co., Muscatine, for paving with concrete as follows: Poplar and 9th sts. to Lombard.

**New Albany, Ky.**—Board of County Commissioners has awarded to W. W. Woodruff of Louisville contract for construction of that part of Vincennes road that extends from Clark and Floyd county line at Sellersburg road to point near Blackiston's Mills. Length of road is 15,446 ft., and contract price is \$25,600. Contract for construction of remainder of road will be awarded later.

**De Ridder, La.**—To De Latte & LaGrane, of Lake Charles, for construction of nine miles of sidewalks.

**Elkton, Md.**—To Allen Construction Co., of New Jersey, contract to build 4.6 miles of macadam road between Elkton and Chesapeake City for \$47,561.

**Lawrence, Mass.**—For constructing state highway on Salem road, for distance of a mile and a half starting at Wilson's corner, North Andover. The roadway is to be of concrete. Lowest bidders, David Sheehan & Co., were awarded contract by state highway commission. Bids submitted were as follows: A. McLean, \$24,599; W. P. Rae, \$22,449.90; R. Hudson, \$22,403; Timothy A. Minahan, \$20,391.80; J. A. Caffrey, \$20,554.90; Rome Construction Co., \$19,934.50; Hassam Paving Co., \$18,391.80, and David Sheehan & Co., \$15,537.50.

**Houghton, Mich.**—To Anderson Concrete Construction Co. contract for constructing concrete walk along west side of Clark st., from Florence st. to top of hill.

**Manistique, Mich.**—By Schoolcraft County Commissioners, contract to macadamize 3 1/4 miles of state reward road in Hlawatha Township, to Delta Construction Co., of Escanaba, Mich., for \$2,900 per mile.

**Duluth, Minn.**—J. A. Johnson, 717 2d st., at \$63,340 is low bidder for improvement of Seventh st., between Fourth ave. West and 14th ave. East.

**Springfield, Mo.**—By city for paving, etc., as follows 9,340 sq. yds. concrete paving to Jarrett-Richardson Paving Co., Woodruff Bldg., Springfield, at \$1.37 per sq. yd.; 23,070 sq. yds. asphaltic concrete paving to same company at \$1.59 per sq. yd.; 12,250 sq. yds. concrete paving to the Plummer-Adams Co., U. N. Bank Bldg., Springfield, at \$1.36 1/4 per sq. yd.; 7,600 sq. yds. concrete paving to Dan C. Crane, Springfield, Mo., at \$1.23 per sq. yd.; 13,040 sq. yds. concrete paving to Vanderslice & Sturdivant, 513 Poplar st., Springfield, Mo., at \$1.25 per sq. yd.; 1,310 lin. ft. 4-ft. walk, cement, to same company at 77 cts. per lin. ft.; 9,300 lin. ft. concrete curb to A. H. Matthews, 940 Proctor st., Springfield, at 36 cts. per lin. ft.; 2,600 lin. ft. concrete curb to Speer & Bacon, 1329 N. Grant st., at 42 cts. per lin. ft.; to Fox & Cornwall, 1020 N. Campbell st., Springfield, 9,560 lin. ft. concrete curb at 36 cts. per lin. ft.; 1,550 lin. ft. concrete curb and gutter combined, 62 cts. per lin. ft., and 4,695 lin. ft. 4-ft. walk, cement, 76 cts., 68 cts., 59 cts. per lin. ft.; and for 2,040 lin. ft. 4-ft. walk, cement, to Springfield Crushed Stone Co., 124 S. Side square, Springfield, Mo., at 95 cts., 65 cts. per lin. ft.

**Belvidere, N. J.**—Warren County Board of Freeholders has approved contract with Salmon Bros., to build Blairstown-Hainesburg road for \$49,287.08, and ordered half-mile Delaware Park road in Lopatcong township built for \$4,000. It has been decided to place tarvia on Allmucky-Hackettstown road at 5 cts. a sq. yd.

**Newark, N. J.**—Contracts have been awarded tentatively by board of works for repaving of Broad st. with wood block. Bids of Van Keuren & Sons of Jersey City for three sections of work have been accepted, and work on fourth section, from South st. to Poinier st., will be done by firm of O'Gara & Maguire, if board decides to repave that part of street. Total cost will be \$357,042.90. If board had decided to buy blocks the American Creosoting Co., of this city would have been low bidder on material, and Van Keuren firm would have been low on construction work on all four sections. Under plan adopted, however, O'Gara & Maguire were \$614.50 lower than Van Keuren on fourth sections. Winning bid on first section, between Belleville ave. and Fulton st., was \$82,438.25; on the second section, from Fulton st. to Market st., the low figure was \$78,018.25; third section, from Market st. to South st., \$140,391.40, and the bid of O'Gara & Maguire on the fourth section was \$56,195.

**Roselle, N. J.**—Borough Engineer Bauer has recommended awarding of street oiling contract to W. E. Kline, of Elizabeth, being lowest bidder.

**Westfield, N. J.**—By Town Council for about 3,200 sq. yds. 4-in. waterbound macadam, 2,300 sq. yds. waterbound macadam to be completed, 2,900 sq. yds. of old macadam to be resurfaced, etc., and the contract has been awarded to Humphrey & Bentley, of Hackensack, for \$4,838. A. W. Vars is Town Engr.

**Lockport, N. Y.**—Contract for grading, curbing and paving of Cave st. with brick has been awarded by aldermen to C. N. Stalnithorpe & Co., of Lockport, on their bid of \$3,990. Other proposals received were C. E. Whitmore Co., \$4,480, and H. P. Burgard Co., \$4,500, the latter being of Buffalo.

**Lowville, N. Y.**—By village board for oiling number of streets to William Sliter, a representative of the Standard Oil Co.

**Jamestown, N. Y.**—By board of estimate and review for furnishing and delivery on cars approximately 2,500 sq. yds. asphalt blocks, to New Castle Asphalt Block Co. at \$1.45 per sq. yd.

**Port Washington, L. I., N. Y.**—To John Mitchell, of Port Washington, contract to lay concrete sidewalk on Bayview and Sixth aves., Port Washington, by town board.

**Poughkeepsie, N. Y.**—Lowest bidder for paving of Rose, Cherry, Little Smith and Perry sts., is the Bridgeport Construction Co., of Poughkeepsie, at \$13,262. Next lowest was Patrick Mulderry, of Albany, at \$13,409. For paving South Clover, North Bridge, John and South sts., lowest bidder was Patrick Mulderry at \$38,578, while Bridgeport Construction Co.'s bid was \$38,820. Contracts will probably be awarded to above companies.

**Rochester, N. Y.**—Contract for Primrose st. brick pavement has been awarded to F. L. Hagaman for \$2,614.50, for the Edinburgh st. pavement to Whitmore, Rauber & Vicinus for \$6,130, and Ajax alley asphalt pavement to same firm for \$2,089.50.

**Utica, N. Y.**—To John W. Davitt, Troy, contracts for work in Elm and Albany sts. and Seymour and Capitol aves.

**Carrington, N. D.**—By city to J. P. O'Leary contract for building sidewalks and cross walks for city for ensuing year, at \$1.10 per sq. yd. for sidewalk, and \$1.95 for cross walks.

**Canton, O.**—By county commissioners contract to Vogt & Son for about 9 1/2 miles of paving road between Louisville and Alliance with wire cut brick, cement fill; cost about \$190,500.

**Columbus, O.**—By state highway commissioner for grading and paving with waterbound macadam Sec. No. 2 Devalon road, State Highway "B" Pet. No. 441 in Union and Point townships to Korah E. Kunkle, Dayton, O., at \$6,347, and for grading and paving with concrete pavement with bituminous surface treatment the Columbus-Lancaster road, State Highway "E" Pet. No. 662 in Madison township to Oather M. Junk, Chillicothe, O., at \$7,332.75.

**Delaware, O.**—By city for paving Griswold and Webb sts., to C. W. Riddle, of Delaware.

**Findlay, O.**—By Surveyor Hilty, contract for three new roads as follows: Cusac road, to John Semmler, for \$1,250; Shank road, to Stout Brothers, for \$971.25; and the Shaw road, to John Semmler, for \$1,638.45.

**Springfield, O.**—By Board of Control, to Edward Ryan, of Springfield, the contract for paving of South Limestone st. Material selected was Trinidad lake asphalt, with Hocking block between the tracks. Mr. Ryan's bid was \$22,453.45 for asphalt on section between John st. and Leffel lane, with \$4,070.43 for track paving. On section between Rice and John sts., his bid was \$20,977.50 for asphalt and \$3,131.10 for the track paving.

**Urbana, O.**—By Board of Control, contract for oiling of streets in Urbana, to Solar Refining Co., of Lima, a branch of the Standard Oil Co. Contract specifies that company shall furnish between 60,000 and 110,000 gallons of No. 4 asphalt road oil at 6 1/2 cts. a gallon.

**Youngstown, O.**—Good roads commissioners have opened bids for paving two sections of Austintown road extending paving from end of present "warrenite" surface west of Perkins' Corners to West Austintown. Bids covered various kinds of patent paving and contracts will be awarded as soon as board determines on kind of paving to be used. New surface is to be laid over present macadam

roadway and work will be done this summer. Low bids on each material are as follows: Section 3 (9,378 ft.), warrenite, Kane & Smith, \$19,256.16; westrumite, Kane & Smith, \$17,681.48; tarvia, Ross O'Rourke, \$9,594.94; asphalt, \$9,303.18; glutrin, Ross O'Rourke, \$7,873.70; bermudez, Seagons & Serafino, \$12,399; byerlite, Ross O'Rourke, \$11,783.14. Section 4 (7,100 ft.), Ross O'Rourke low bidder on all materials as follows: tarvit, \$6,837.45; asphalt, \$6,523.55; glutrin, \$5,335.20; Bermudez, \$7,527.15; byerlite, \$8,607.06.

**Barnesboro, Pa.**—Contract for considerable paving in Barnesboro has been awarded by Barnesboro council to Polo Azara, of Barnesboro, on bid of something more than \$11,000.

**Braddock, Pa.**—To McCrady Bros., Sixth st., Braddock, Pa., contract by Borough of North Braddock, for grading and curbing Pallas ave., Center st., East st., Margaret al., Shaver al., Grandview ave. and Poplar al., at \$49,609. Work includes concrete foundation and brick pavement.

**Erie, Pa.**—By city for paving of 12th st. and East ave. to J. & M. Doyle at \$1.48 per sq. yd.; also for asphalt pavement on Ash st., to same firm, at same price.

**Oil City, Pa.**—For paving of Cooper ave. and Crawford st. to Burns Bros., of New Castle. Following are bids received: Leshner, Roess & Leshner, of Oil City, Porter National, \$34,468.30; Pennsylvania clay, \$34,000.30; Mack block, \$34,468.30; Bessemer block, \$33,688.30. Burns Bros., of New Castle, Porter National, \$33,677.50; Pennsylvania clay, \$33,209.50; Mack block, \$33,755.50; Bessemer block, \$33,521.50. Northwestern Construction Co., of Franklin, Porter National, \$34,466.40; Pennsylvania clay, \$33,998.40; Mack block, \$34,466.40; Bessemer block, \$34,154.40. These bids include concrete curbs and gutters and cement filler.

**Reading, Pa.**—To John E. Weidner has been awarded contract to pave Fisher's court at \$2.03 per sq. yd. For paving of other alleys contract has been awarded to John K. Faust at \$2.05½ per sq. yd.

**Watertown, S. D.**—Board of City Commissioners has awarded contract for putting down of paving in streets of business district to Watertown Cement Construction Co., of this city. Material to be used is asphalted concrete and contract price \$1.58 per sq. yd. Contract carries aggregate of \$73,000.

**Bellingham, Wash.**—For paving (a) Northeast Diagonal road, 14,511 sq. yds., and (b) Northwest Diagonal road, 17,422 sq. yds., to include permanent culverts of concrete, and a concrete pavement 6 ins. thick and 16 ft. wide will be constructed entire distances mentioned to K. Sausett, (a) \$21,900 (awarded contract), (b) \$27,700 and Eagle Paving Co., (a) \$22,942, (b) \$23,177 (awarded contract). Other bids as follows: West Coast Construction Co., (a) \$23,452, (b) \$25,367; Cascade Construction Co., (a) \$24,667, (b) \$26,970; D. H. Traphagen, (a) \$25,680, (b) \$27,200; Skagit Construction Co., (a) \$27,067, (b) \$30,038.

**Centralia, Wash.**—Contract for improvement of South Pearl st. has been awarded by Centralia City Commission to Alfred & James, Centralia contractors.

**Ellensburg, Wash.**—By Board of County Commissioners, contract for paving of Craig's hill road to Charles Anderson, of Ellensburg. Contract price is \$23,317, and road is to be surfaced with vitrified brick. Pavement is to be 16 feet in width, with gravel shoulders four feet in width on each side, making roadway of 22 feet in width.

**Racine, Wis.**—By board of public works, contracts for public improvements, as follows: Fred Nelson was given contract for grading Forest st., from State to Liberty, his bid being 58½ cts. per cu. yd. Other bidders were: Jas. Cape & Sons, 69 cts.; N. P. Reichera, 60 cts.; Birdsall-Griffith Construction Co., 60 cts. P. C. Hanson was awarded contract for sprinkling Kinzie ave., bidding 10 cts. per lin. ft. Other bidders were: Mat Gehl, 10½ cts.; N. P. Reichert, 11 cts. P. C. Hanson also received contract for sprinkling West Sixth st. at 9 cts. per lin. ft. Other bidders were: N. P. Reichert and Mat Gehl, each 11 cts.

**Superior, Wis.**—To E. A. Dohl for paving of Baxter st.

## SEWERAGE

**Roanoke, Ala.**—Citizens have voted in favor of \$20,000 bonds for sewer system.

**West Hartford, Conn.**—Town will let contracts about June 1 for over 17 miles of pipe sewers, 3 miles being 24 and 22-inch double strength tile, which will be furnished by contractor. Sewer commission consists of A. C. Sternberg, Jr., Cha., Dennis Ahern and Allen S. Griswold. Plans may be seen at office of Ford, Buck & Sheldon, Inc., Consulting Engrs., 60 Prospect st., Hartford.

**Newark, Del.**—Proposed system of sewers and disposal plant will be voted on May 31. Estimated cost, \$51,000.

**Eustis, Fla.**—Bids will be received by Town Clerk until 8 p. m., June 2, 1913, for \$29,000 negotiable coupon bonds, issued for purpose of constructing sanitary sewerage system. Percy H. Hethcox, Clerk of Town.

**Cottonwood, Idaho.**—Preliminary survey for proposed sewer system for Cottonwood have been completed. System will be about three and one-half miles in length and will serve practically entire town. A septic tank has been located below town and it is understood proposed system can be installed for approximately \$20,000.

**Kellogg, Idaho.**—At special meeting of City Council it was decided to call election for bonding city in sum of \$30,000 for purpose of constructing sewers. Election will be held June 16. Length and cost of different sections of proposed sewers are: McKinley ave. and laterals, 10,000 ft., \$13,438; railroad trunk and laterals, 10,000 ft., \$13,997; Sunnyside, 5,000 ft., \$5,960; or a total of \$46,734. It is proposed to construct all of these sewers this summer except Sunnyside, Cowels, Papesh and Pressly laterals of railroad trunk system. Estimated cost of work to be done this summer is \$30,000.

**Ft. Scott, Kan.**—It is proposed to improve and extend sewer system. C. R. Fisher is City Engr., and G. N. Sanford is city clerk.

**Worcester, Mass.**—Committee on sewers of city council has recommended construction of sewers, to cost about \$26,450.

**Atlantic City, N. J.**—Bonds in sum of \$180,000 have been sold for extension of storm water laterals.

**Camden, N. J.**—Ordinance has been passed authorizing construction of sewers, culverts or drains in and along Elm st., from Ninth st. to Tenth st.; Tenth st., from Butler st. to Morton st., and Morton st., from Tenth st. to Mt. Ephraim ave.

**Hammonton, N. J.**—The new Hammonton sewer commission has requested Council to appropriate \$10,000 as starter for carrying out its plans.

**Newark, N. J.**—Pethick Bros., of 51 Chambers street, were lowest bidders for construction of three subdivisions of the Passaic Valley trunk sewer, but awarding of contract has been deferred until May 27.

**Trenton, N. J.**—Ordinance has been adopted to authorize construction of Sewer No. 512, in Muirhead Street Frank Thompson, City Clerk.

**Brooklyn, N. Y.**—Resolutions have been adopted for considerable sewer work in Brooklyn and in Queens.

**Herkimer, N. Y.**—Special election will be held May 29 for voting on \$30,000 bond issue for extension of sewer system in village.

**Herkimer, N. Y.**—Municipal Commission has entered into agreement with Engineer John J. Taney of firm of Taney & Wood to perfect plans for sewage disposal plant in this village, this being one of requirements of State Board of Health, before permission would be granted to extend the village sewer system. Plans are to be completed June 1 and are to be subject to approval of State Board of Health.

**Phoenix, N. Y.**—Two propositions for construction of sewers will be submitted to taxpayers at election.

**Schenectady, N. Y.**—Substitute ordinance has been introduced and adopted by common council, ordinance having been introduced to meet condition now existing in bond market. It provides for \$380,000 bond issue for sewage disposal and intercepting sewers, and takes place of similar ordinance for smaller bond issue submitted two weeks ago.

**Syracuse, N. Y.**—State Senate has adopted bill providing for storm water sewers in 1st and 2d Wards, and has authorized \$100,000 bond issue for same.

**Dickinson, N. D.**—City Engineer Vigel has been authorized to make plans and specifications for sewer districts num-

ber four, five and six so that they can be put up for bids.

**Cincinnati, O.**—Committee on Ways and Means has reported favorably on \$400,000 worth of sewer bonds for Mill Creek, Duck Creek, Westwood trunk sewers and the Avondale surface sewer.

**Dayton, O.**—Bonds have been sold for sewer improvements.

**Toledo, O.**—R. W. Pratt, of Cleveland, sanitary engineer, will begin his work shortly on plans for disposing of sewage in Ten Mile and Swan Creeks.

**McKeesport, Pa.**—City Engineer Smith has completed plans for sewer to be constructed on River st.

**Providence, R. I.**—Resolutions have been passed ordering sewers to be constructed as follows: Health ave., from Academy ave. to a point 50 ft. west of Huron st.; in Wealth ave., from Academy ave. to Huron st., and in Huron st., from Wealth ave. to Wisdom ave. Estimated cost, \$4,134.71; assessments, \$4,214. Mount Pleasant ave., from near Dover st. to Chalkstone ave. Estimated cost, \$2,179.56; assessments, \$2,200. Loring ave., from President ave. to Irving ave.; in Clarendon ave., from Slater ave. to Blackstone blvd.; in Grotto ave., from Loring ave. to Penrose ave., and in Slater ave., from a point about 70 ft. south of President ave. to Lloyd ave. Estimated cost, \$2,459.80; assessments, \$2,877. Gallatin st., from Niagara st. to Melrose st., and in Kenwood st., from near Messer st. to Waverly st. Estimated cost, \$3,043.90; assessments, \$4,036.

**Dallas, Tex.**—City Secretary has been instructed to advertise for bids for laying six-inch sanitary sewer in Tuttle street, from Walter to 200 ft. beyond Lee; and in South Harwood from Warren to Cooper.

**Hamilton, Tex.**—In election here to determine issuing \$6,000 sewer bonds vote stood, for bonds 87, against bonds 48.

**Bellingham, Wash.**—City council has approved of resolutions for construction of sewers in York addition.

**Madison, Wis.**—Installation of new purification plant is recommended in report of Consulting Engineer J. W. Alvord of Chicago to City Engineer Parker.

**Racine, Wis.**—A thorough survey of city of Racine for purpose of mapping out sanitary program of how to scientifically dispose of its sewage for years to come will cost about \$6,800, according to preliminary report submitted to Common Council by John W. Alvord, a sanitary engineering expert of Chicago.

## CONTRACTS AWARDED.

**San Diego, Cal.**—By city council, contract to construct proposed Pound canyon sewer through Balboa Park to Engineering & Contracting Co., for \$37,993.

**San Jose, Cal.**—To Casley & Henwood contract for sewers to be laid on following streets: Jackson, from Seventh to Tenth, \$585; San Salvador st., from First to Market st.; Reed st., from Third to Fifth st.; Santa Teresa st., from Fox ave. to Clayton ave., \$980. Mastic st., from Willow to Goodyear st.; Plum st., from Willow to Goodyear st.; Home st., from Martin to Hannah ave., \$1,330. Bartlett st., from Willow to Goodyear; McClellan ave., from Edwards ave. to Goodyear; Lick ave., from Willow to Sunnyside ave.; Harliss ave., from Willow to Edwards ave., \$2,135.

**Hartford, Conn.**—Following sewer contracts have been awarded: Contract for sewer on Terry road, from Albany ave. to Asylum st., to C. H. Slocumb & Co., of Hartford, for \$19,826.50. The other bids figured out: F. B. & W. H. O'Neil, \$21,302.10; B. Silvester, \$21,444.60; A. Conti & Co., \$22,896.75; John Manocchio, \$25,347.25. North Front st. sewer construction to Marcox Di Berardino, for \$1,116.50. Other bids were: B. Silvestri, \$1,247.50; John Manocchio, \$1,471; F. B. & W. H. O'Neil, \$1,515. Enfield st., northerly from Mather st., to Louis Rogers for \$774.50. Other bids were: Di Marco & Di Berardino, \$801.50; B. Silvestri, \$948; John Manocchio, \$952.50; Petrossi Bros., \$955. Sewer on private land through Broadview terrace and Green ave. to New Britain ave., to C. H. Slocumb & Co., for \$2,875. Other bidders were: John Manocchio, \$3,105.10; F. B. & W. H. O'Neil, \$3,310.40; B. Silvestri, \$3,385.80; Di Marco & Di Berardino, \$3,634.50.

**Belleville, Ill.**—By Board of Local Improvements, contract for Silver st. sewer to Hoeffken Bros. of that city for \$2,326.

**Fulton, Ill.**—Contract for sewer to Kelley Bros., of Morrison.